PIONEER

Service Manual

CIRCUIT DESCRIPTIONS
REPAIR & ADJUSTMENTS

ORDER NO.
ARP-814-0

STEREO CASSETTE TAPE DECK AMPLIFIER

DC-111Z
DC-110Z

(Silver version of DC-111Z)

- DC-111Z is the same as the DC-110Z except for the exterior design (color).
- Models DC-111Z and DC-110Z come in seven versions distinguishes as follows:

Type	Applicable model		Power requirement	Destination
	DC-111Z	DC-110Z		
KU	O	—	AC 120V only	U.S.A
HE	O	O	AC 220V (240V)* (Switchable)	European continent
HB	O	—	AC 240V (220V)* (Switchable)	United Kingdom
S	O	O	AC 110V/120V/240V (Switchable)	General market
YP	O	—	AC 240V only	Australia
KC	O	—	AC 120V only	Canada
HEZ	O	O	AC 220V (240V)* (Switchable)	West Gemany

* Change the primary wiring of the power transformer.

- This service manual is applicable to the KU, HE, HB, S and YP types.
- As to the HE, HB, S and YP types please refer to the page 46.
- As to the KC type, please refer to the additional service manual (ARP-813).
- As to the HEZ type, please refer to the additional service manual (ARP-815).
- Ce manual d'instruction se refèr au mode de réglage, en français. (P36-P40)
- Este manual de servicio trata del método adjuste escrito espanöl. (P41-P45)

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS [USA] INC. P.O. Box 1760, Long Beach, California 90801 U.S.A.
TEL: [800] 421-1404, [800] 237-0424
PIONEER ELECTRONIC [EUROPE] N.V. Keetberglaan 1, 2740 Beveren, Belgium TEL: 03/775-28-08
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia
TEL: [03] 580-9911

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CONTENTS

1. SPECIFICATIONS 2
2. FRONT PANEL FACILITIES 3
3. DISASSEMBLY 4
4. PARTS LOCATION 9
5. PACKING 11
6. EXPLODED VIEW 12
7. ELECTRICAL PARTS LIST 18
8. P.C. BOARDS CONNECTION DIAGRAM 21
9. SCHEMATIC DIAGRAM 25
10. BLOCK DIAGRAM 29
11. CIRCUIT DESCRIPTIONS 30
12. ADJUSTMENTS 31
    RÉGLAGE 36
    AJUSTE 41
13. FOR HE, HB, S AND YP TYPES 46
14. SAFETY INFORMATION 48

1. SPECIFICATIONS

AMPLIFIER SECTION

Continuous Average Power Output is 25 Watts* per channel, min., at 8 ohms from 40 Hertz to 20,000 Hertz, with no more than 0.3% total harmonic distortion.

**Measured pursuant to the Federal Trade Commission's Trade Regulation rules on Power Output Claims for Amplifiers.*

Continuous Power Output
- 40 to 20,000Hz ..... 25 W + 25 W (T.H.D. 0.3% 8 ohms)
- 1 kHz (DIN) ..... 32 W + 32 W (T.H.D. 1% 8 ohms)
- 1 kHz (DIN music power) ..... 45 W + 45 W (T.H.D. 1% 8 ohms)

Hum and Noise (IHF, short-circuited, A network)
- PHONO ..... 72 dB

Hum and Noise (DIN continuous Power/50 mV)
- PHONO ..... 68 dB/60 dB

Total Harmonic Distortion (40 Hz to 20,000 Hz, 8 ohms), from CD/VIDEO
- 12.5 Watts per channel power output ..... No more than 0.2%

Tape Deck Section

Systems ..... 4 track, 2-channel stereo
Heads ..... "Hard Permalloy" recording/playback head x 1
"Ferrite" erasing head x 1
Motor ..... DC servo motor x 1
Wow and Flutter ..... No more than 0.08% (WRMS)
No more than ±0.20% (DIN)
Fast Winding Time ..... Approximately 115 seconds (C-60 tape)
Frequency Response
- −20 dB recording:
  - Normal tape ..... 35 to 13,000 Hz
  - Metal tape ..... 35 to 15,000Hz

Signal-to-Noise Ratio
- Dolby NR OFF ..... More than 55 dB

Noise Reduction Effect
- Dolby NR B type ON ..... More than 10 dB (at 5 kHz)

Furnished Parts

Operating Instructions 1

Miscellaneous

Power requirements
KU and KC models ..... AC 120 V, 60 Hz
HE model ..... AC 220 V, 50/60Hz
HB and YP models ..... AC 240 V, 50/60 Hz
S and S/G models ..... AC 110 V/120 V/220 V/240 V, 50/60 Hz (switchable)

Power Consumption

KU model ..... 199 W
KC model ..... 199 W
HE, HB, and YP models ..... 270 W
S and S/G models ..... 199 W
Dimensions ..... 420(W) x 188(H) x 224 (D) mm
16-9/16(W) x 7-6/16(H) x 8-13/16(D) in
Weight (without package) ..... 5.5 kg (12 lb 2 oz)

QUESTIONNAIRE

MODEL _____

One Model per questionnaire

Dear Servicer,

Thank you for your cooperation in the post-sale service of Pioneer products.

This questionnaire is used as a tool to improve the serviceability of our products and service manuals. Please evaluate this model and service manual by answering the following questions. Your ideas may be realized in our future products. Your answers will be appreciated. Thank you.

PIONEER ELECTRONIC CORP.

T. Nakagawa, Manager, Service Section, International Division

1. SERVICING EVALUATION	Circle applicable number:	Good		Fair		Poor
a. Disassembly/Re-assembly:		1	2	3	*4	*5
b. Circuit Checks:		1	2	3	*4	*5
c. Replacement of Parts:		1	2	3	*4	*5
d. Adjustment (s):		1	2	3	*4	*5

* If (4) or (5) was circled, please be specific.

e. Your advice, opinion or ideas related to servicing this product.

2. SERVICE MANUAL EVALUATION

a. Circuit & Mechanism Description

b. Circuit Diagram

3. OTHER

Please describe other areas of servicing which you may find difficult.

Completed by : Date :

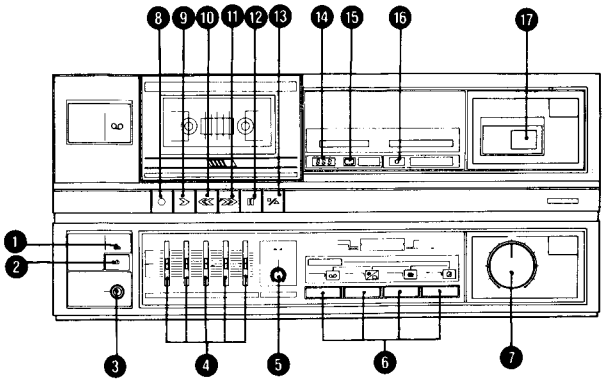
Company Name :

Address :

City/State/Zip :

Please send this form filled to the distributor in your country.

2. FRONT PANEL FACILITIES



❶ **POWER indicator**

❷ **POWER switch**

❸ **HEADPHONES jack**

❹ **GRAPHIC EQUALIZER controls**

By operating these five controls, equalization effects can be added to program source or tape playback sounds.

❺ **BALANCE control**

❻ **FUNCTION switches**

TAPE (∞): Push when playing back tapes.
CD/VIDEO (◑∘): Push when listening to a component connected to the CD/VIDEO terminals.
TUNER (⁂): Push when listening to broadcasts on the tuner.
PHONO (◎): Push when playing records on the turntable.

❼ **VOLUME control**

❽ **REC switch** (○)

❾ **PLAY switch** (▷)

❿ **REW switch** (◁◁)

⓫ **FF switch** (▷▷)

⓬ **PAUSE switch** (▯▯)

⓭ **STOP/ EJECT switch** (⏏)

⓮ **TAPE COUNTER**

⓯ **RESET button**

Push this button to reset the tape counter display to 000.

⓰ **REC indicator**

This lights during the recording mode.

⓱ ***DOLBY NR switch**

Push this switch to ON when recording with the built-in Dolby noise reduction system (B type), and when playing back tapes which have been recorded using the system.

*Noise Reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"Dolby" and the double-D symbol are trademarks of the Dolby Laboratories Licensing Corporation.

3. DISASSEMBLY

Cassette Replacement Procedures

1. Remove 7 pieces of screw ①.
2. Remove Bonnet case.
3. Remove 2 pieces of screw ② and 1 piece of nut ②.
4. Push the claw at the bottom of chassis, remove the Front panel assembly, and pull out toward you. Remove the LED assembly (A) and (B) from the Front panel assembly.
5. Remove 6 pieces of screw ③, and enable the Power amplifier assembly to move upward. (See Fig. 3-2)
6. Remove connectors J7, J11 and J21 of the wiring coming out of the Tape transport unit. (Separate the Front panel assembly from the main body.)
7. Open the Cassette door. (See Fig. 3-3)
8. Remove 4 pieces of screw ④.
9. Remove Counter belt from Tape counter, and hook onto the Tape transport unit.
10. Remove the Tape transport unit from the Front panel assembly.

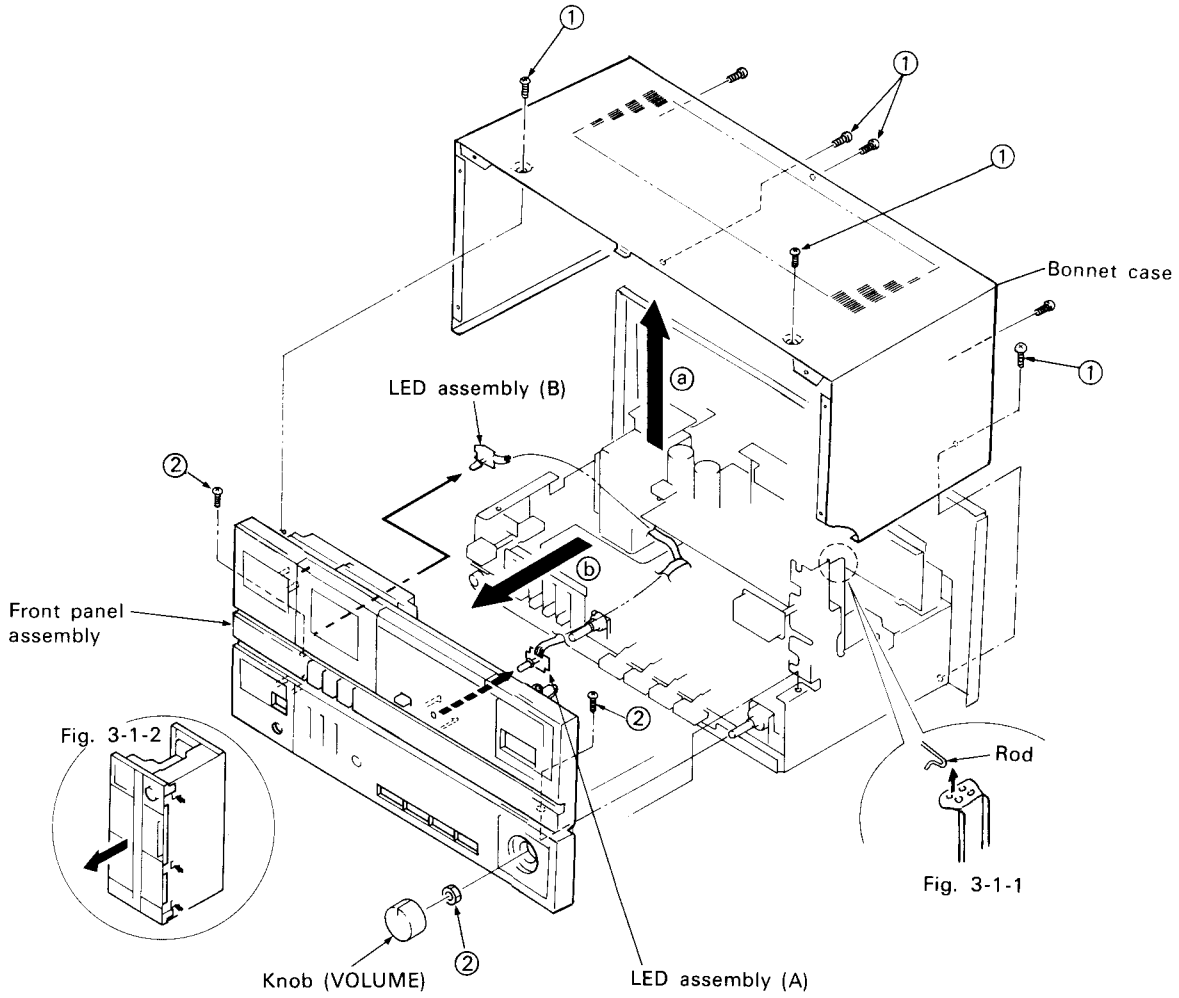


Fig. 3-1

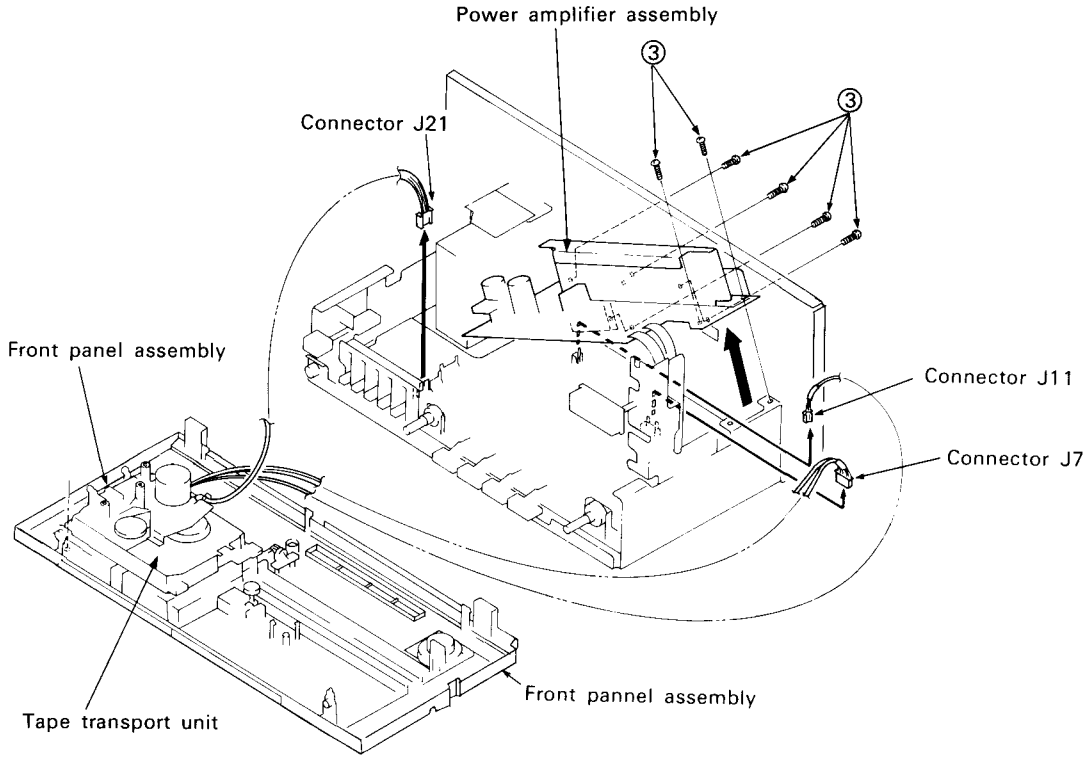

Power amplifier assembly
③
③
Connector J21
Front panel assembly
Connector J11
Connector J7
Front pannel assembly
Tape transport unit

Fig. 3-2

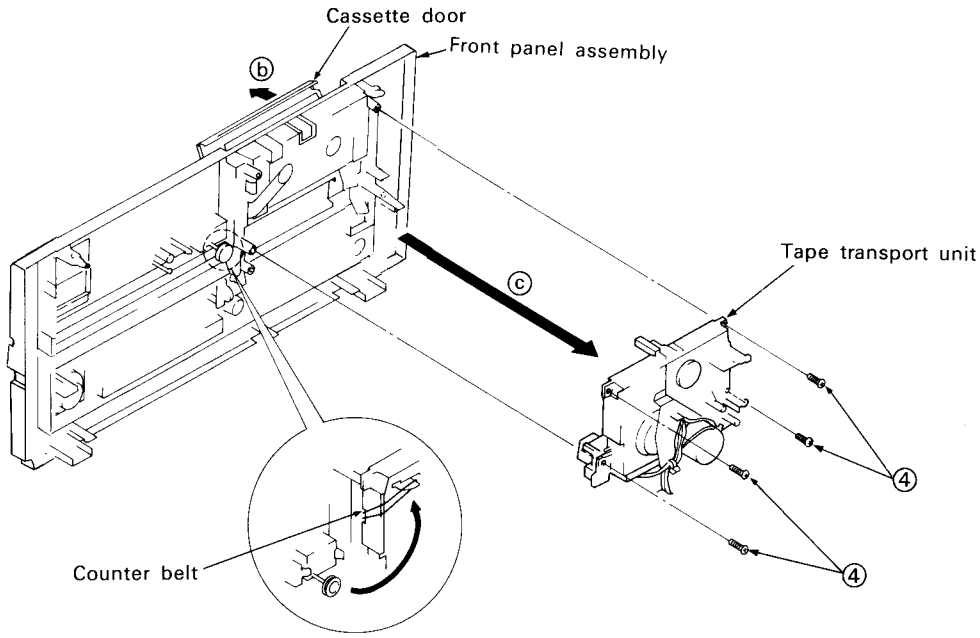

Cassette door
Front panel assembly
ⓑ
ⓒ
Tape transport unit
④
④
Counter belt

Fig. 3-3

COMPONENT PARTS REPLACEMENT PROCEDURES

Replacement of Motor

1. Remove lead wire of motor terminal.
2. Remove set screw ① and detach Motor holder.
3. Remove 2 set screws ②, and detach the Motor.
4. Pull out Motor pulley from Motor.
5. Attach Motor pulley to new motor.
6. Adjust the height of Motor pulley. (see Fig. 3-4-1)
7. Attach Motor to Motor holder.
8. While applying a Belt to the flywheel side, attach Motor plate to Tape transport unit.
9. Apply Belt to driving pulley and pulley.
10. Solder lead wire to motor terminal.
11. Fasten securely head lead and control lead with binder.
12. Adjust the tape speed.

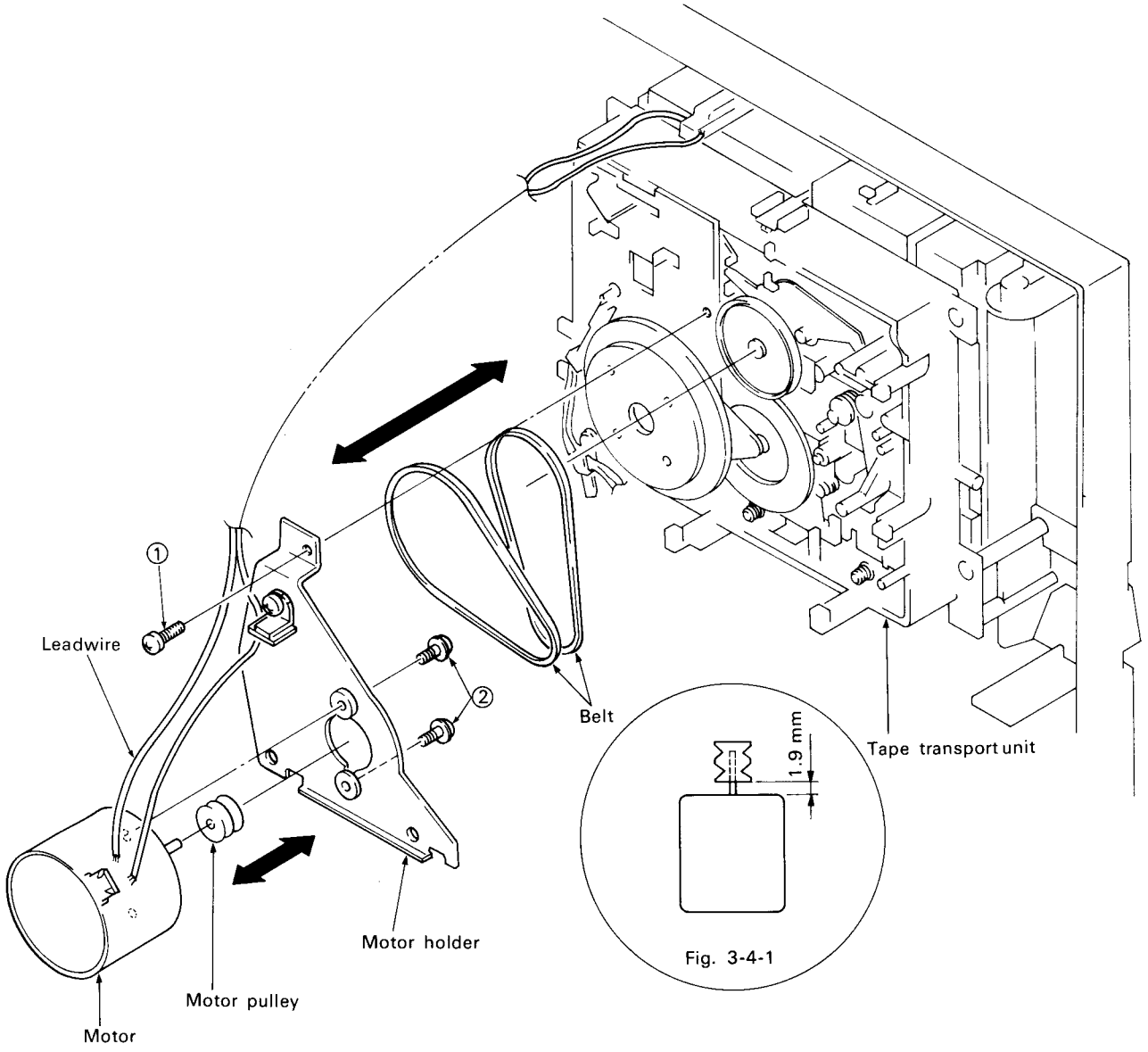


Fig. 3-4-1

Fig. 3-4

Replacement of Belt

1. Remove set screw (1) and detach Motor holder the Tape transport unit.
2. Replace the old belt with a new one.
3. While applying the Belt on the flywheel side, attach Motor holder to the Tape transport unit.
4. Apply belt to driving pulley and pulley.
5. Fasten securely head lead and control lead with binder.
6. Adjust the tape speed.

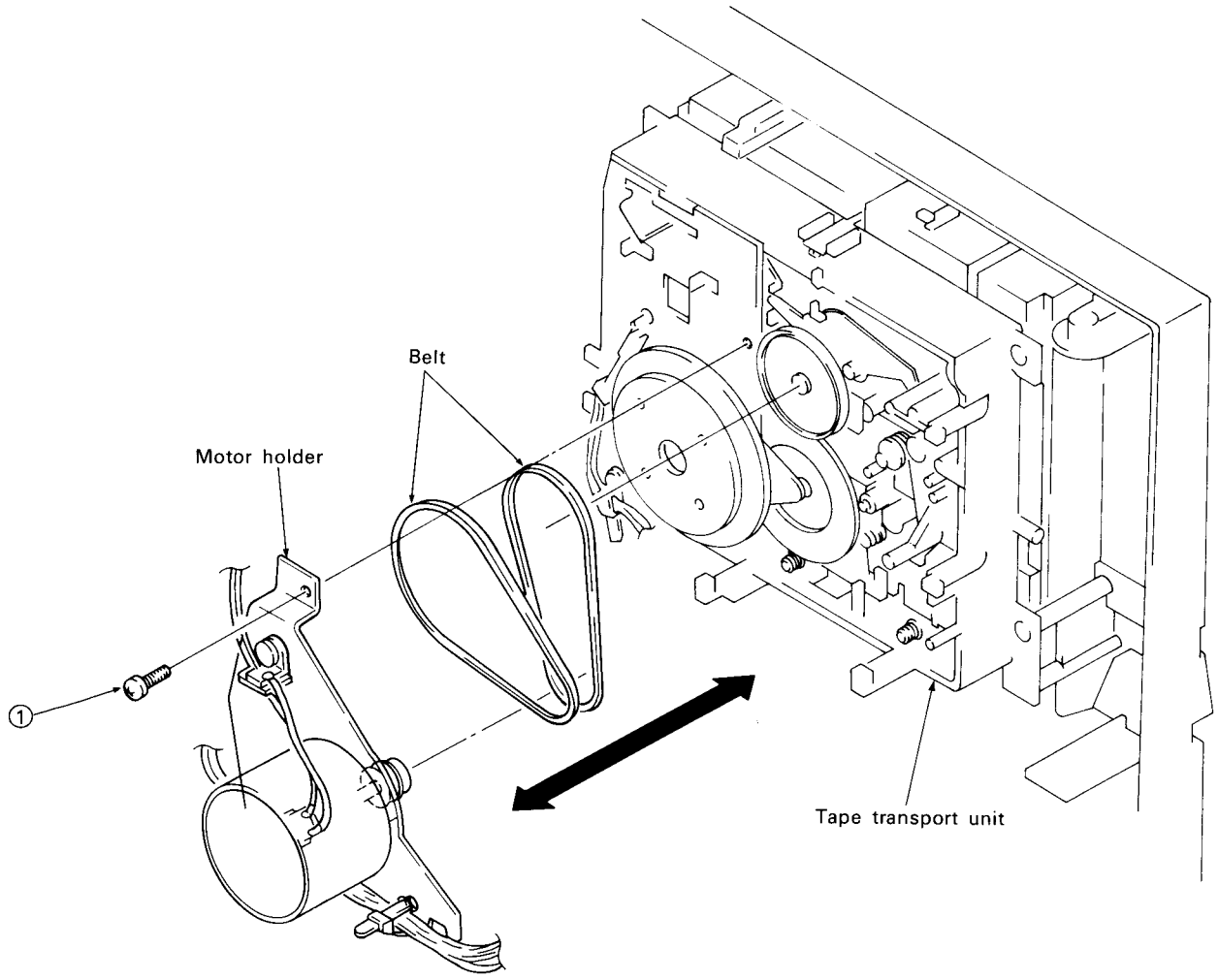


Fig. 3-5

Replacement of Head

1. Detach cassette knob.
2. Remove head lead from head.
3. Remove set screw ① of head.
4. Remove former head and install a new one.
5. Solder the head lead while taking precaution not to touch the wirings.
6. Attach cassette knob.
7. Check the running of tape.
8. Perform azimuth adjustment.
9. Perform bias adjustment.

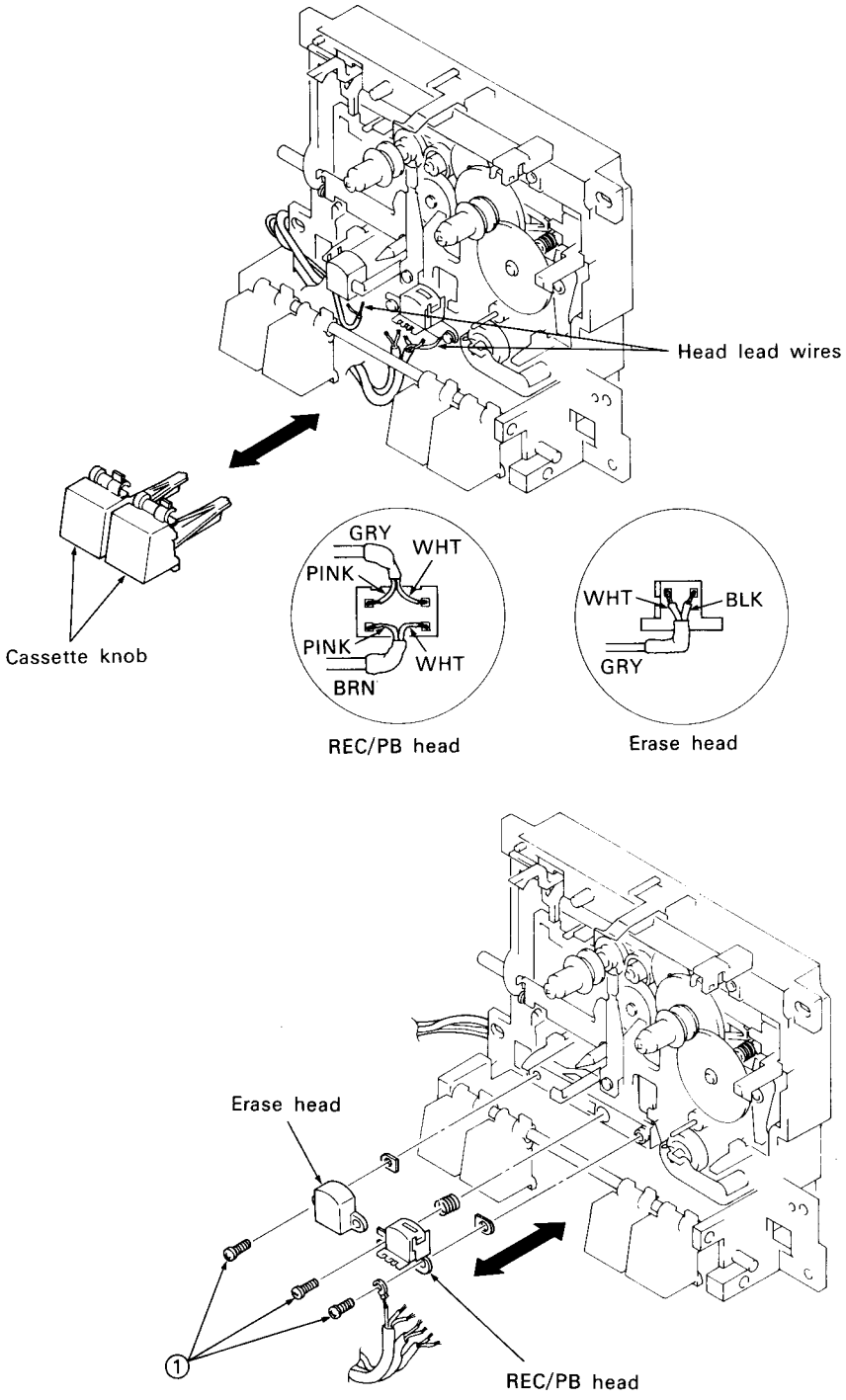


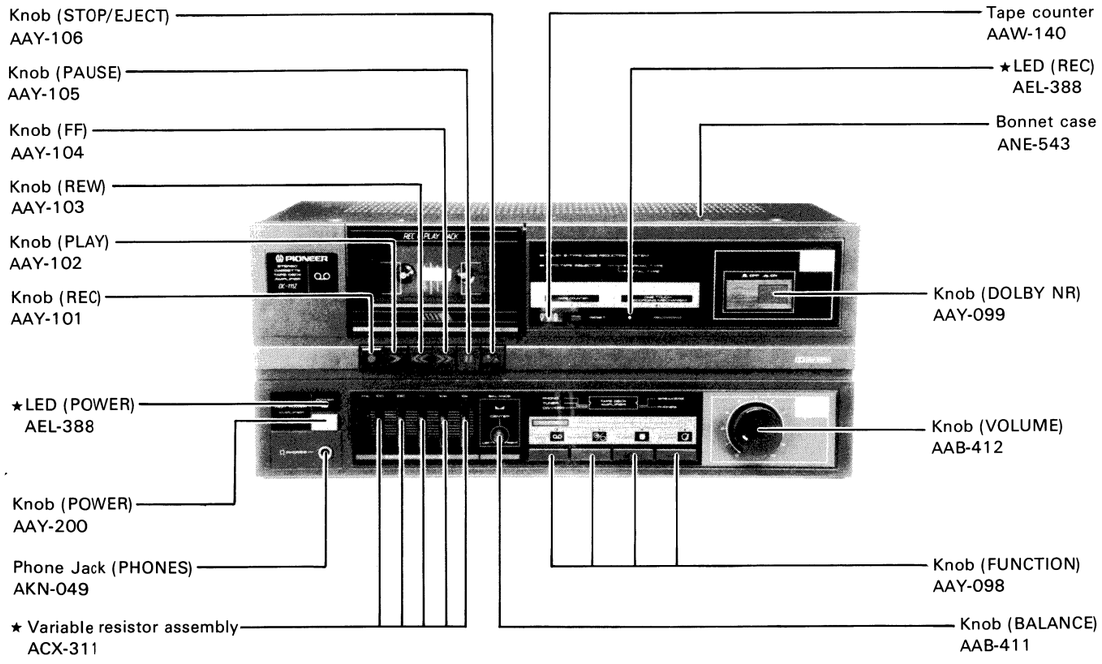
Fig. 3-6

4. PARTS LOCATION

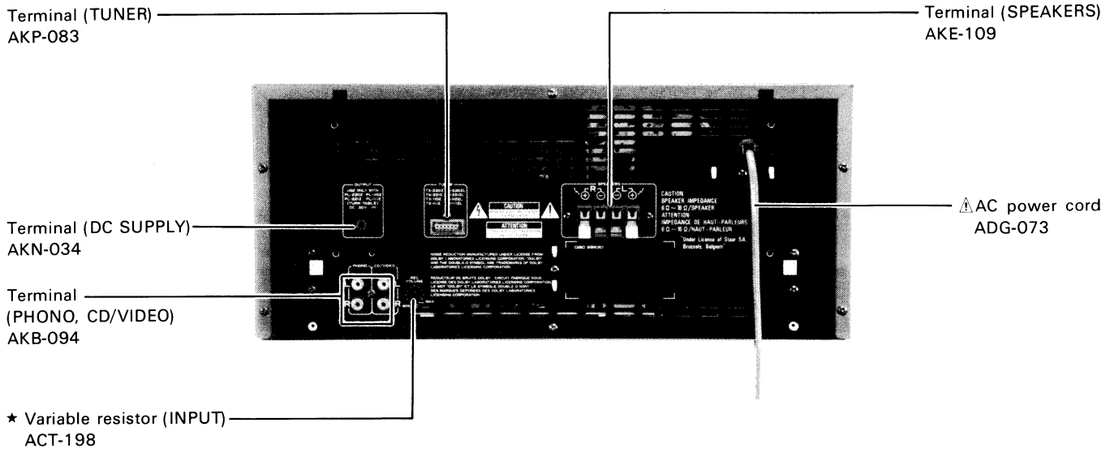
NOTES:

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

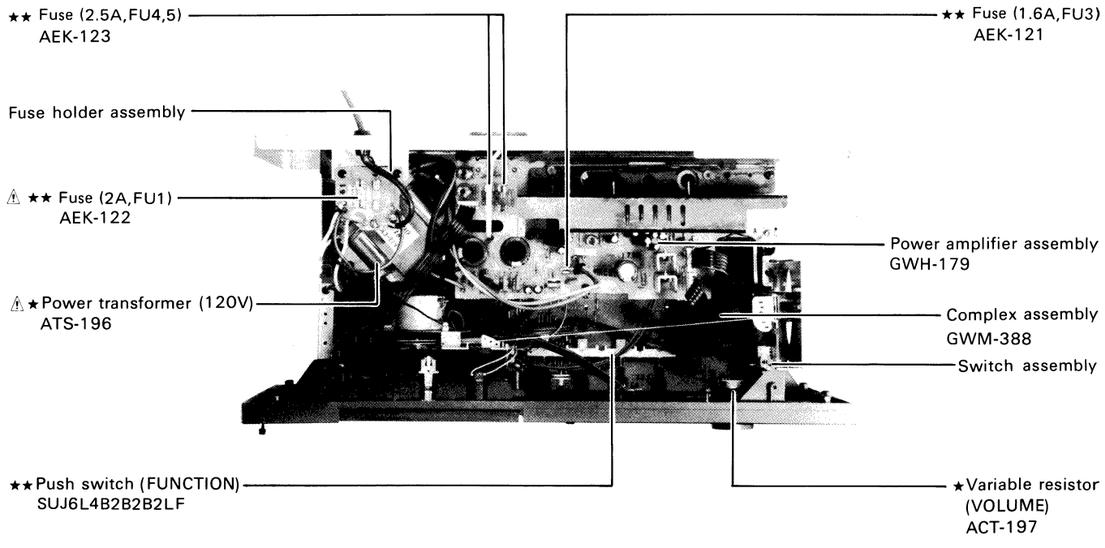
Front Panel View (DC-111Z)



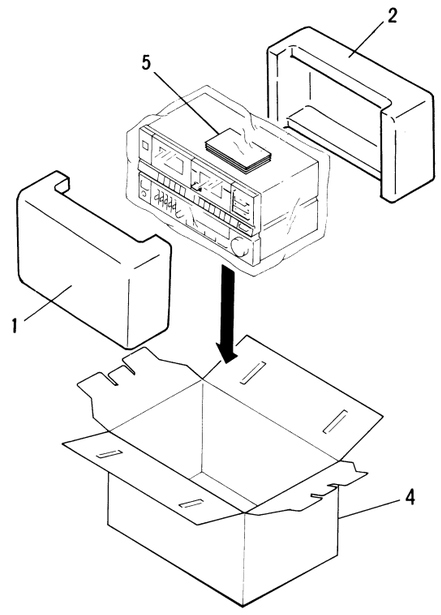
Rear Panel View (DC-111Z)



Top View (DC-111Z)



5. PACKING



Mark	No.	Part No.	Description
	1	AHA-400	Front pad
	2	AHA-401	Rear pad
	3	.....	.....
	4	AHE-527	Packing case for DC-111Z
		AHE-528	Packing case for DC-110Z
	5	ARB-679	Operating instructions (English)

Contrast of Miscellaneous parts.

Key No.	Symbol & Description	Part No.		Remarks
		DC-111Z	DC-110Z	
16	Knob A (REC)	AAY-101	AAY-085	
17	Knob B (PLAY)	AAY-102	AAY-086	
18	Knob C (REW)	AAY-103	AAY-087	
19	Knob D (FF)	AAY-104	AAY-088	
20	Knob E (PAUSE)	AAY-105	AAY-089	
21	Knob F (STOP/EJECT)	AAY-106	AAY-090	
23	Front panel assembly	ANM-888	ANM-949	
26	Name panel	ANZ-039	ANZ-043	
28	Deck panel	ANZ-037	ANZ-042	
29	Amp panel	ANZ-055	ANZ-056	

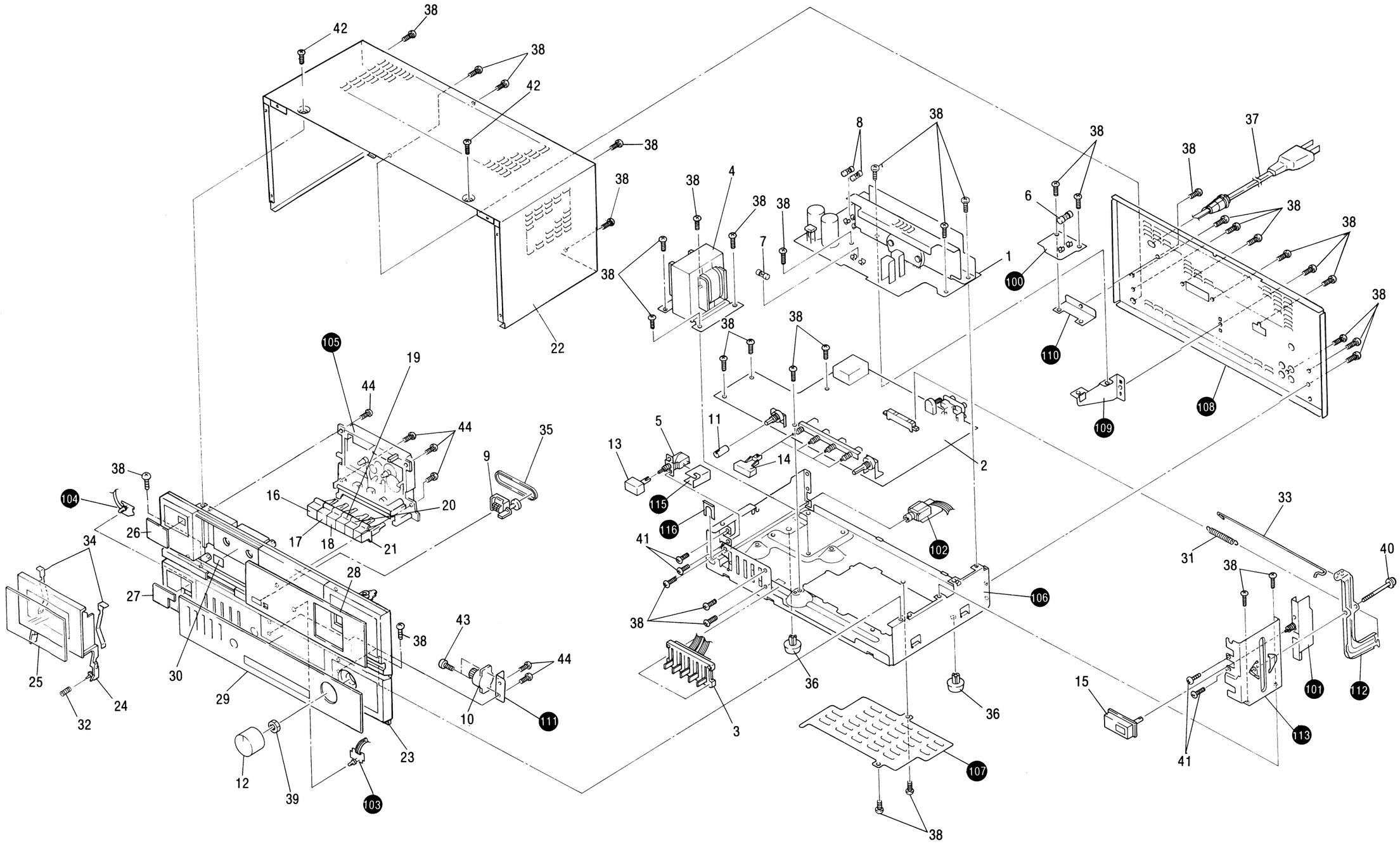
6. EXPLODED VIEW

NOTES:
- ***Parts without part number cannot be supplied.***
- ***The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.***
- ***For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.***
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

Parts List of Exterior (DC-111Z) Regarding DC-110Z, see the table in page 11.

Mark	No.	Part No.	Description
	1	GWH-179	Power amplifier assembly
	2	GWM-388	Complex assembly
★	3	ACX-311	Variable resistor assembly
⚠ ★	4	ATS-196	Power transformer (120V)
⚠ ★★	5	ASG-539	Push switch (POWER)
⚠ ★★	6	AEK-122	FU1 Fuse (2A)
⚠ ★★	7	AEK-121	FU3 Fuse (1.6A)
⚠ ★★	8	AEK-123	FU4,5 Fuse (2.5A)
	9	AAW-140	Tape counter
	10	ANZ-044	Damper assembly
	11	AAB-411	Knob (BALANCE)
	12	AAB-412	Knob (VOLUME)
	13	AAY-200	Knob (POWER)
	14	AAY-098	Knob (FUNCTION)
	15	AAY-099	Knob (DOLBY NR)
	16	AAY-101	Knob (REC)
	17	AAY-102	Knob (PLAY)
	18	AAY-103	Knob (REW)
	19	AAY-104	Knob (FF)
	20	AAY-105	Knob (PAUSE)
	21	AAY-106	Knob (STOP/EJECT)
	22	ANE-543	Bonnet case
	23	ANM-888	Front panel
	24	ANR-964	Door (L)
	25	ANZ-038	Door panel S
	26	ANZ-039	Name panel
	27	ANZ-032	POWER panel
	28	ANZ-037	Deck panel
	29	ANZ-055	Amp panel
	30	AAX-426	Shine paper
	31	ABH-156	REC spring
	32	ABH-147	Coiled spring
	33	ABH-149	Rod
	34	ABK-012	Keep plate
★★	35	AEB-197	Counter belt
	36	AEC-847	Leg assembly
⚠	37	ADG-073	AC power cord
	38	BBZ30P080FZK	Screw 3×8
	39	NK90FUC	Nut
	40	ABA-286	Screw
	41	VMZ30P060FMC	Screw 3×6
	42	BPZ30P080FZK	Screw 3×8
	43	PBZ20P040FMC	Screw 2×4
	44	VPZ30P080FMC	Screw 3×8
	100		Fuse holder Assembly
	101		Switch assembly
	102		Headphone jack assembly
	103		LED assembly (A)
	104		LED assembly (B)
	105		Tape transport unit
	106		Chassis
	107		Bottom plate
	108		Rear panel
	109		Heat sink holder
	110		P.C.B holder
	111		Damper holder
	112		REC lever
	113		REC base
	114		.....
	115		Switch barrier
	116		Clamp plate

Exterior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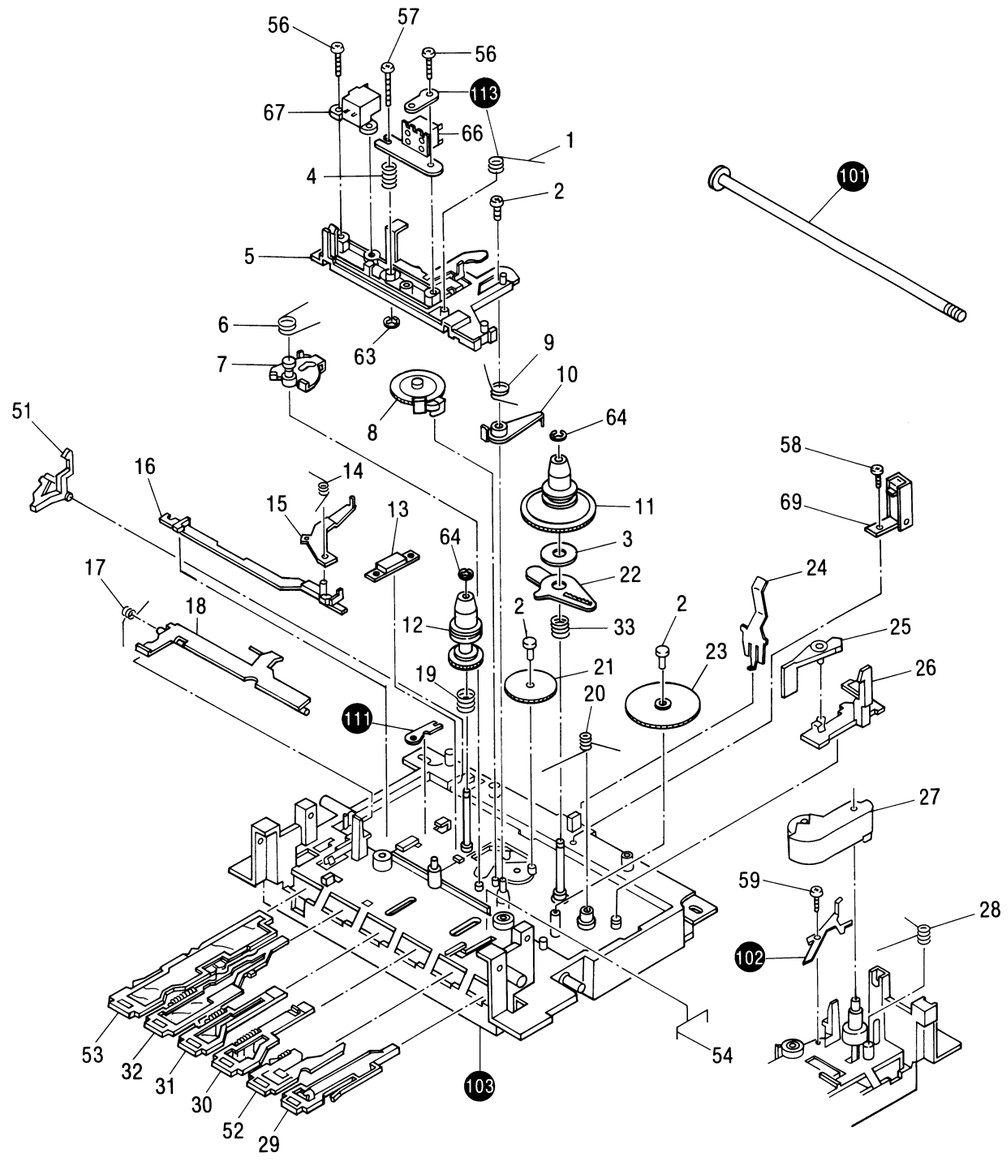
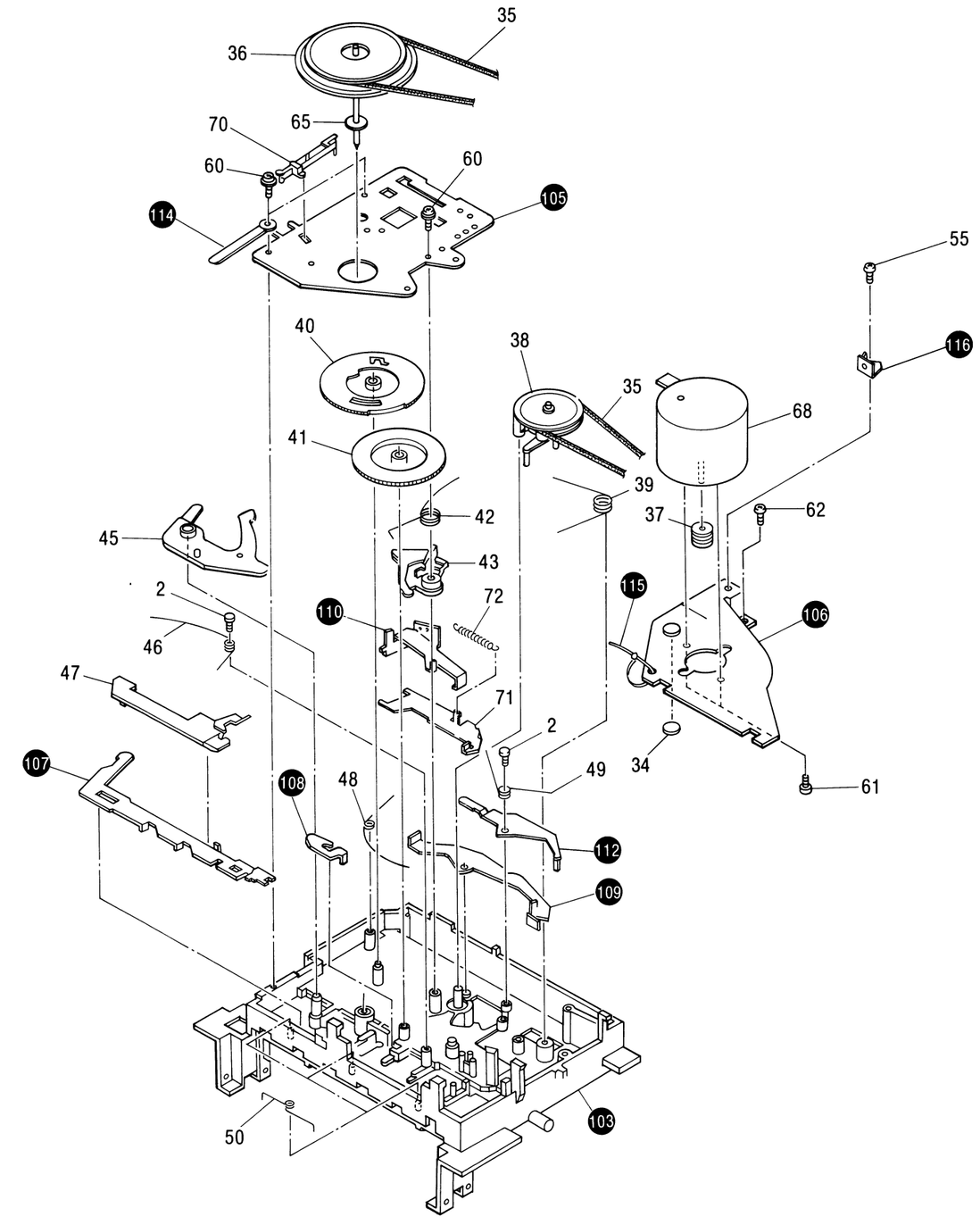
Tape Transport Unit





Parts List of Tape Transport Unit

NOTES:

- ***Parts without part number cannot be supplied.***
- ***The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.***
- ***For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.***
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

Mark	No.	Part No.	Description
	1	AXV-087	Torsion spring
	2	AXT-007	Bush
	3	AXW-034	Felt
	4	AXV-064	Compression spring
	5	AXS-078	Head base
	6	AXV-088	Torsion spring
	7	AXS-079	FR arm
★★	8	AXP-037	P idler assembly
	9	AXV-089	Torsion spring
	10	AXS-080	Reset lever
★★	11	AXP-038	T reel assembly
★★	12	AXP-039	S reel assembly
	13	AXS-081	FR release lever
	14	AXV-090	Torsion spring
	15	AXS-082	P release lever
	16	AXS-083	PL plate
	17	AXV-091	Torsion spring
	18	AXS-099	FR plate
	19	AXV-092	S brake spring
	20	AXV-093	Torsion spring
	21	AXS-084	F idler gear
	22	AXS-085	Sensor cam
	23	AXS-086	AS gear
	24	AXV-094	Cassette holder
	25	AXS-087	Eject cam
	26	AXS-088	Latch lever
★★	27	AXP-040	Pinch arm assembly
	28	AXV-095	Torsion spring
	29	AXS-089	SE lever
	30	AXS-091	FF lever
	31	AXS-092	REW lever
	32	AXS-093	PL lever B
	33	AXV-096	Torsion spring
	34	AXW-035	Thrust receptacle
★★	35	AXW-036	Belt
	36	AXP-041	Flywheel assembly
	37	AXS-101	Motor pulley
★★	38	AXP-042	FR idler arm assembly
	39	AXV-104	Torsion spring
	40	AXS-094	Assist gear A
	41	AXS-095	Assist gear B
	42	AXV-098	Torsion spring
	43	AXS-096	P cam lever
	44	·····	
	45	AXS-097	CR cam lever

Mark	No.	Part No.	Description
	46	AXV-099	Torsion spring
	47	AXS-106	FR start lever
	48	AXV-100	Torsion spring
	49	AXV-101	Torsion spring
	50	AXV-102	Torsion spring
	51	AXS-098	Interlock plate
	52	AXS-090	Pause lever
	53	AXS-100	REC lever
	54	AXV-103	Lock pin
	55	BDZ26P050FMC	Screw 2.6×5
	56	BTZ20P080FMC	Screw 2×8
	57	BMZ20P100FMC	Screw 2×10
	58	PTZ26P060FMC	Screw 2.6×6
	59	·····	·····
	60	BTZ26P060FMC	Screw 2.6×6
	61	PMA26P040FMC	Screw 2.6×4
	62	PDZ26P040FMC	Screw 2.6×4
	63	NA20FMC	Nut M2
	64	WA16D040D020	Washer 1.6×4×0.2
	65	WA21D040D030	Washer 2.1×4×0.3
★★	66	AXN-031	REC/PB head
★	67	AXN-032	Erase head
★★	68	AXN-023	Motor
★★	69	AXN-024	Spring switch (S12, METAL)
★★	70	AXN-025	Spring switch (S11, MUTE)
	71	AXS-102	REC link lever
	72	AXV-106	Tension spring
	101		Button shaft
	102		Grounding lug
	103		Chassis
	104		·····
	105		Gear holder
	106		Motor holder
	107		FR S lever
	108		Protector
	109		PL start lever
	110		RS W lever
	111		REC protector
	112		REC change plate
	113		Lug
	114		Cord fixer
	115		Wire tie
	116		Lug terminal

7. ELECTRICAL PARTS LIST

NOTES:

- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
  Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560Ω	*56 × 10¹*	*561 .....*	*RD¼PS 5601 J*
47kΩ	*47 × 10³*	*473 .....*	*RD¼PS 4703 J*
0.5Ω	*0R5*	*.....*	*RN2H 0R50 K*
1Ω	*010*	*.....*	*RS1P 0100 K*

  Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 × 10¹*	*5621 ....*	*RN¼SR 5621 F*

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

Miscellaneous Parts

P.C. BOARD ASSEMBLIES

Mark	Symbol & Description	Part No.
	Power amplifier assembly	GWH-179
	Complex assembly	GWM-388
	Switch Assembly	Non supply
	Headphone jack assembly	Non supply
	Fuse holder assembly	Non supply
	LED assembly (B)	Non supply
	LED assembly (A)	Non supply

SWITCH

Mark	Symbol & Description	Part No.
⚠ ★★	S1 Push switch (POWER)	ASG-539

TRANSFORMER

Mark	Symbol & Description	Part No.
⚠ ★	T1 Power transformer (AC120V)	ATS-196

RESISTOR

Mark	Symbol & Description	Part No.
★	VR1 Variable resistor assembly (GRAPHIC EQUALIZER)	ACX-311

FUSES

Mark	Symbol & Description	Part No.
⚠ ★★	FU4, FU5 Fuse (2.5A)	AEK-123
⚠ ★★	FU1 Fuse (2A)	AEK-122
⚠ ★★	FU3 Fuse (1.6A)	AEK-121

OTHERS

Mark	Symbol & Description	Part No.
⚠	AC Power cord	ADG-073
⚠	C1 Ceramic capacitor	ACG-502

Complex Assembly (GWM-388)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC701, IC702	BA3812L
★★	IC401	HA12045
★★	IC501	M5218L
★★	IC601	M5218P
★★	IC301	M5220L
★★	'Q842	DTA143ES (RN2201)
★★	Q810, Q841	DTC124ES (RN1203)
★★	Q801	2SA933S (2SA1048)
★★	Q303, Q304, Q401—Q406, Q408, Q409, Q501, Q502, Q505, Q506, Q846	2SC1740S (2SC2458)
★★	Q843	2SC2603 (2SC2458)
★★	Q844, Q845	2SD438
★★	Q301, Q302	2SC2878
★	D833	RD5.6EB (HZ5.6EB)
★	D401, D402, D808, D822, D840—D843	1SS131

SWITCHES

Mark	Symbol & Description		Part No.
★★	S401	Slide switch (REC/PB)	ASH-105
★★	S701	Push switch (FUNCTION)	SUJ6L4B2B2B2LF

88)

Part No.
BA3812L
HA12045
M5218L
M5218P
M5220L
DTA143ES (RN2201)
DTC124ES (RN1203)
2SA933S (2SA1048)
2SC1740S (2SC2458)
2SC2603 (2SC2458)
2SD438
2SC2878
RD5.6EB (HZ5.6EB)
1SS131

Part No.
ASH-105
SUJ6L4B2B2B2LF

COILS AND TRANSFORMERS

Mark	Symbol & Description	Part No.
	F401, F402 MPX filter	ATF-158
	L801 Inductor	ATH-094
	L501, L502 Inductor	ATH-117
	L401, L402 Trap coil	ATM-031
	L503, L504 Trap coil	ATM-032
	T801 Oscillator transformer	ATX-036

CAPACITORS

Mark	Symbol & Description	Part No.
	C804 Polypropylene (1500p/630V)	ACE-133
	C723, C724 Ceramic (330p/50V)	ACG-028
	C417, C418 Electrolytic (0.27/50V)	ACH-387
	C419, C420 Electrolytic (0.82/50V)	ACH-388
	C305, C306, C605—C608	CCCSL101J50 (CCDSL101J50)
	C802, C803	CCCSL101K500 (CCDSL101K500)
	C403, C404, C429, C430	CCCSL470J50 (CCDSL470J50)
	C709, C710	CEASR15M50
	C801	CEASR47M50
	C705, C706	CEASR68M50
	C303, C304, C423, C424, C517, C518, C615, C616, C815	CEAS010M50
	C311, C312, C407, C408, C425, C426, C501, C502, C519, C520, C701, C702, C727, C728, C814	CEAS100M25
	C453, C725, C726	CEAS101M16
	C401, C402, C405, C406, C427, C428, C452, C603, C604	CEAS2R2M50
	C451, C454	CEAS221M16
	C307, C308, C505, C506	CEAS330M16
	C415, C416	CEAS4R7M50
	C609, C610	CEAS470M10
	C351, C352, C651, C652, C751, C809, C810	CEAS470M16
	C715, C716	CKCYB182K50 (CKDYB182K50)
	C719, C720	CKCYB391K50 (CKDYB391K50)
	C711, C712	CKCYB392K50 (CKDYB392K50)
	C301, C302	CKCYB471K50 (CKDYB471K50)
	C521—C524	CKCYB681K50 (CKDYB681K50)
	C721, C722	CKCYB682K50 (CKDYB682K50)

Mark	Symbol & Description	Part No.
	C717, C718	CKCYX153M25 (CKDYX153M25)
	C707, C708	CKCYX183M25 (CKDYX183M25)
	C703, C704	CKCYX393M25 (CKDYX393M25)
	C713, C714	CKCYX683M25 (CKDYX683M25)
	C806, C808	CQMA153J50
	C503, C504	CQMA182J50
	C421, C422	CQMA183J50
	C313, C314, C507, C508, C805, C807	CQMA223J50
	C611, C612	CQMA242J50
	C411, C412	CQMA333J50
	C511, C512	CQMA393J50
	C413, C414	CQMA472J50
	C309, C310	CQMA562J50
	C613, C614	CQMA822J50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
★	VR701 Variable (BALANCE)	ACT-057
★	VR702 Variable (VOLUME)	ACT-197
★	VR601 Variable (INPUT)	ACT-198
★	VR841, VR842 Semi-fixed 220k	VRTB6VS224
★	VR301, VR302, VR501, VR502, Semi-fixed 22k	VRTB6VS223
	R842	RD1/2PM271J
	R319, R320	RD1/4PM105J
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	Terminal (PHONO, CD/VIDEO)	AKB-094

Switch Assembly

SWITCHES

Mark	Symbol & Description	Part No.
★★	S902 Push switch (DOLBY NR)	SUJL2SF

RESISTORS

Mark	Symbol & Description	Part No.
	R821	RD1/8PM472J
	R822	RD1/8PM622J

Headphone Jack Assembly

RESISTORS

Mark	Symbol & Description	Part No.
	R829, R830	RD1/2PM331J

OTHERS

Mark	Symbol & Description	Part No.
	Phone jack (PHONES)	AKN-049

LED Assembly (A)

SEMICONDUCTOR

Mark	Symbol & Description	Part No.
★	D828 LED (REC)	AEL-388

LED Assembly (B)

SEMICONDUCTOR

Mark	Symbol & Description	Part No.
★	D827 LED (POWER)	AEL-388

Power Amplifier Assembly (GWH-179)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
⚠ ★★	IC101	STK4141-2S
★★	IC102, IC103	μPC78M12H
★★	Q104	2SB834
★★	Q101—Q103	2SC1740S (2SC2603)
★	D101	KZL150
⚠ ★	D106	3D4B41
★	D105	RD13EB (HZ13EB)
⚠ ★	D103, D104, D107—D110	S5566 (11E2)
★	D102	1S2471

RELAY

Mark	Symbol & Description	Part No.
★★	RY101 Relay	ASR-111

COIL

Mark	Symbol & Description	Part No.
	L103, L104 AF choke coil	ATH-053

CAPACITORS

Mark	Symbol & Description	Part No.
	C131, C132 Ceramic (0.01/AC150V)	ACG-019
	C128, C129 Electrolytic (3300/42V)	ACH-249

Mark	Symbol and Description	Part No.
	C105, C106	CCCSL470J50 (CCDSL470J50)
	C101, C102	CCCSL101J50 (CCDSL101J50)
	C119	CEASR47M100
	C113, C115, C116	CEAS100M50
	C107, C108	CEAS101M10
	C109, C110, C118	CEAS101M25
	C114	CEAS101M50
	C103, C104	CEAS2R2M50
	C126, C127	CEAS330M25
	C130	CEAS332M25
	C111, C112, C124, C125	CEAS470M25
	C133	CEAS470M50
	C117	CEAS471M6
	C120, C121	CKCYF473Z50 (CKDYF473Z50)

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
⚠	R129, R130	RD1/2PMF□□□J
	R133, R137, R138	RD1/2PM□□□J
⚠	R125, R126, R141, R142, R134, R118, R119, R120, R136	RD1/4PMF□□□J
	R124	RS1LMF681J
	R131	RS2LMF221J
	R132	RS2LMF271J
	R139	RS2LMF4R7J
	Other resistors	RD1/4PM□□□J

OTHERS

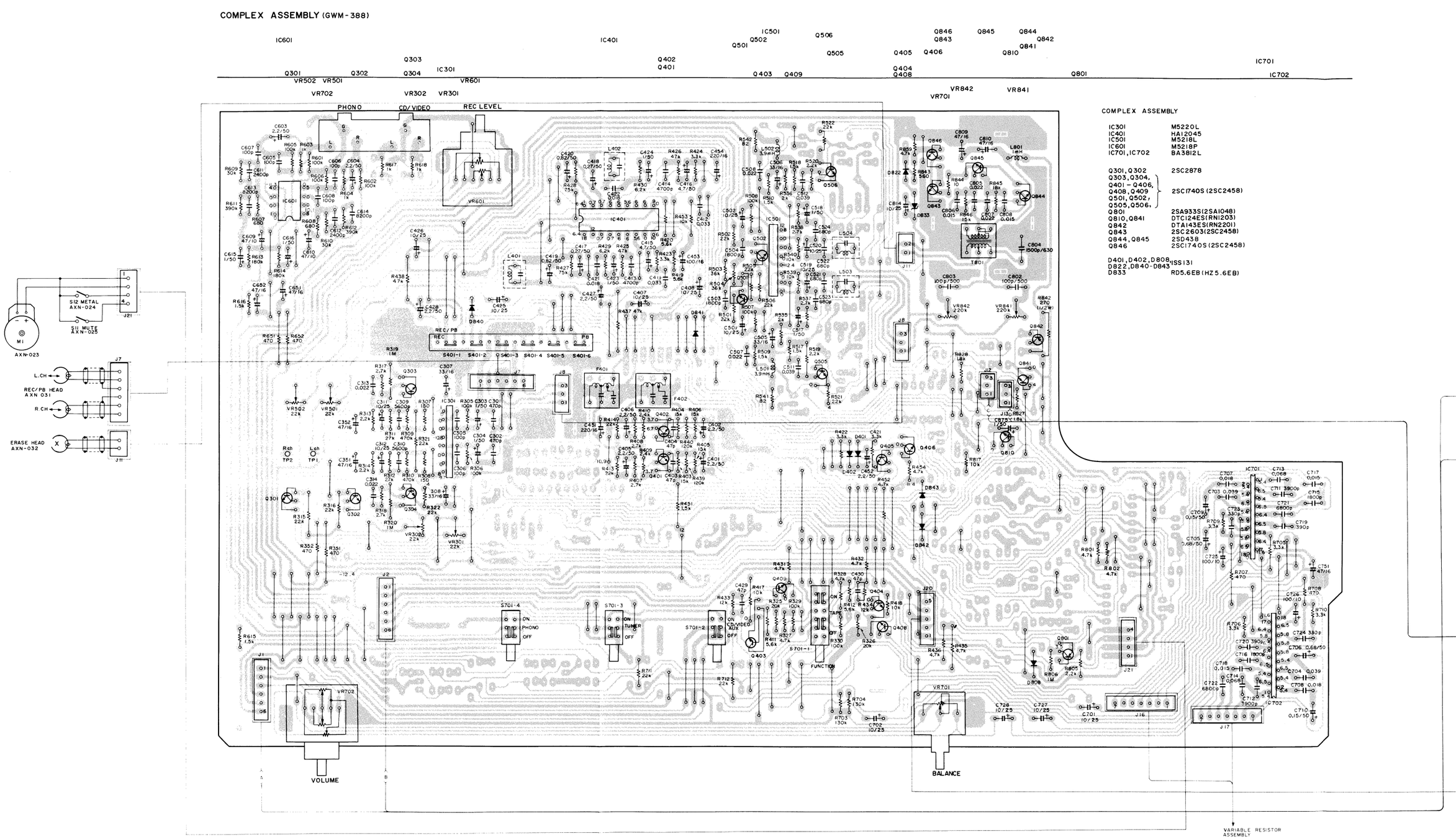
Mark	Symbol & Description	Part No.
	Terminal (SPEAKERS)	AKE-109
	Terminal (DC SUPPLY)	AKN-034
	Terminal (TO TUNER)	AKP-083
	Screw	ABA-271
	Heat proof rivet	AEC-940
	Screw 3×6	PBZ30P060FMC

Fuse Holder Assembly

RESISTOR

Mark	Symbol & Description	Part No.
⚠	R140 Carbon composition (2.2M 1/2W)	ACN-209

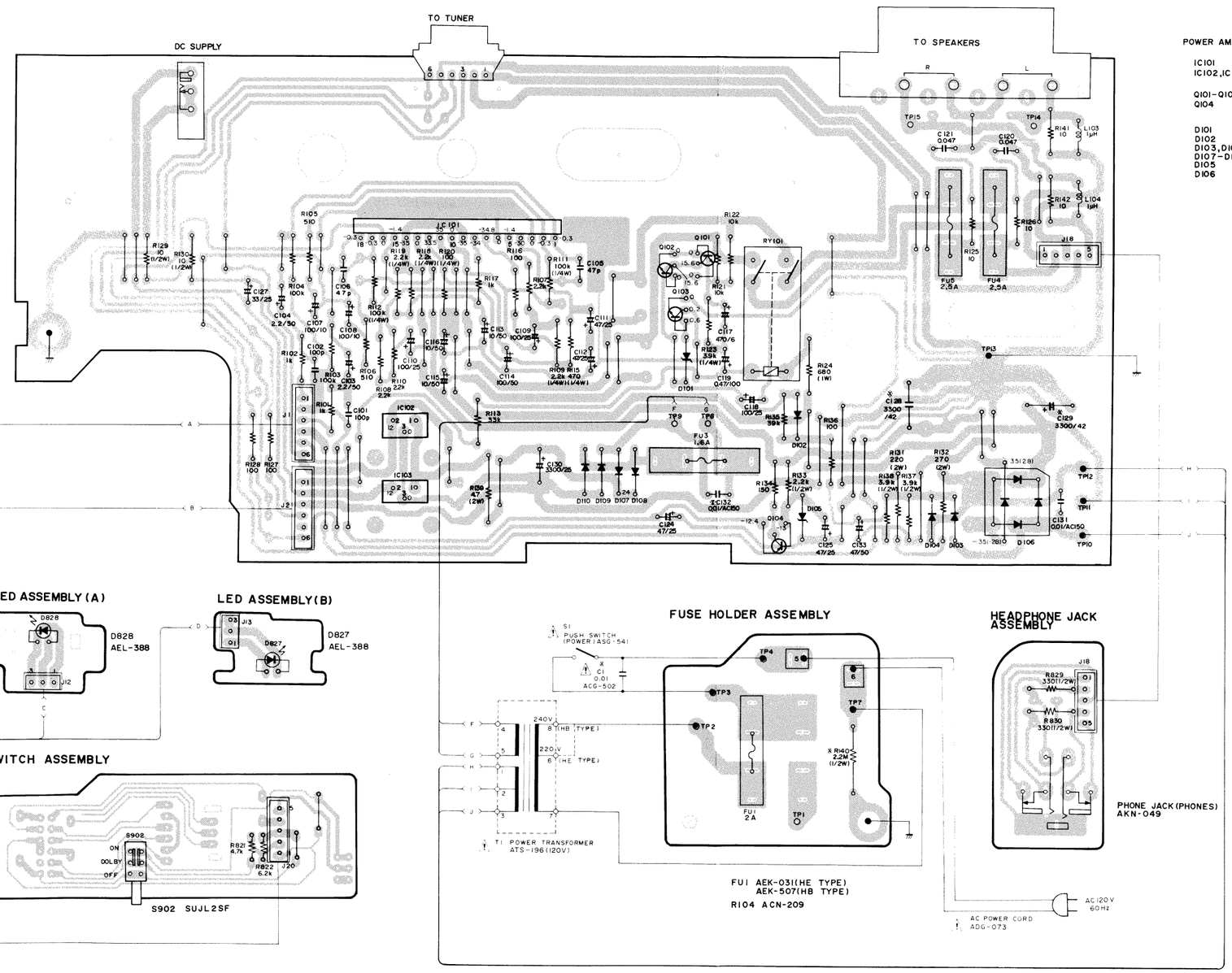
8. P.C. BOARDS CONNECTION DIAGRAM



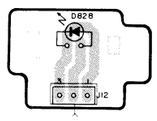
COMPLEX ASSEMBLY

IC301	M5220L
IC401	HA12045
IC501	M5218L
IC601	M5218P
IC701,IC702	BA3812L
Q301,Q302	2SC2878
Q303,Q304, Q401~Q406, Q408,Q409 Q501,Q502, Q505,Q506,	2SC1740S(2SC2458)
Q801	2SA933S(2SA1048)
Q810,Q841	DTC124ES(RN1203)
Q842	DTA143ES(RN2201)
Q843	2SC2603(2SC2458)
Q844,Q845	2SD438
Q846	2SC1740S(2SC2458)
D401,D402,D808	1SS131
D822,D840~D843	
D833	RD5.6EB(HZ5.6EB)

POWER AMP ASSEMBLY (GWH-179)



LED ASSEMBLY (A)



D828
AEL-388

LED ASSEMBLY (B)

D827
AEL-388

SWITCH ASSEMBLY

S902 SUJL2SF

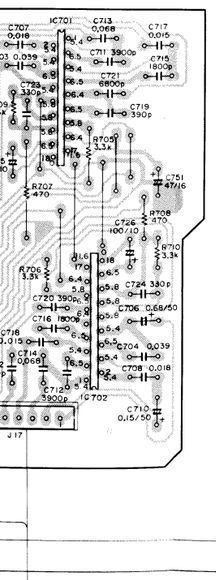
FUSE HOLDER ASSEMBLY

HEADPHONE JACK ASSEMBLY

PHONE JACK (PHONES)
AKN-049

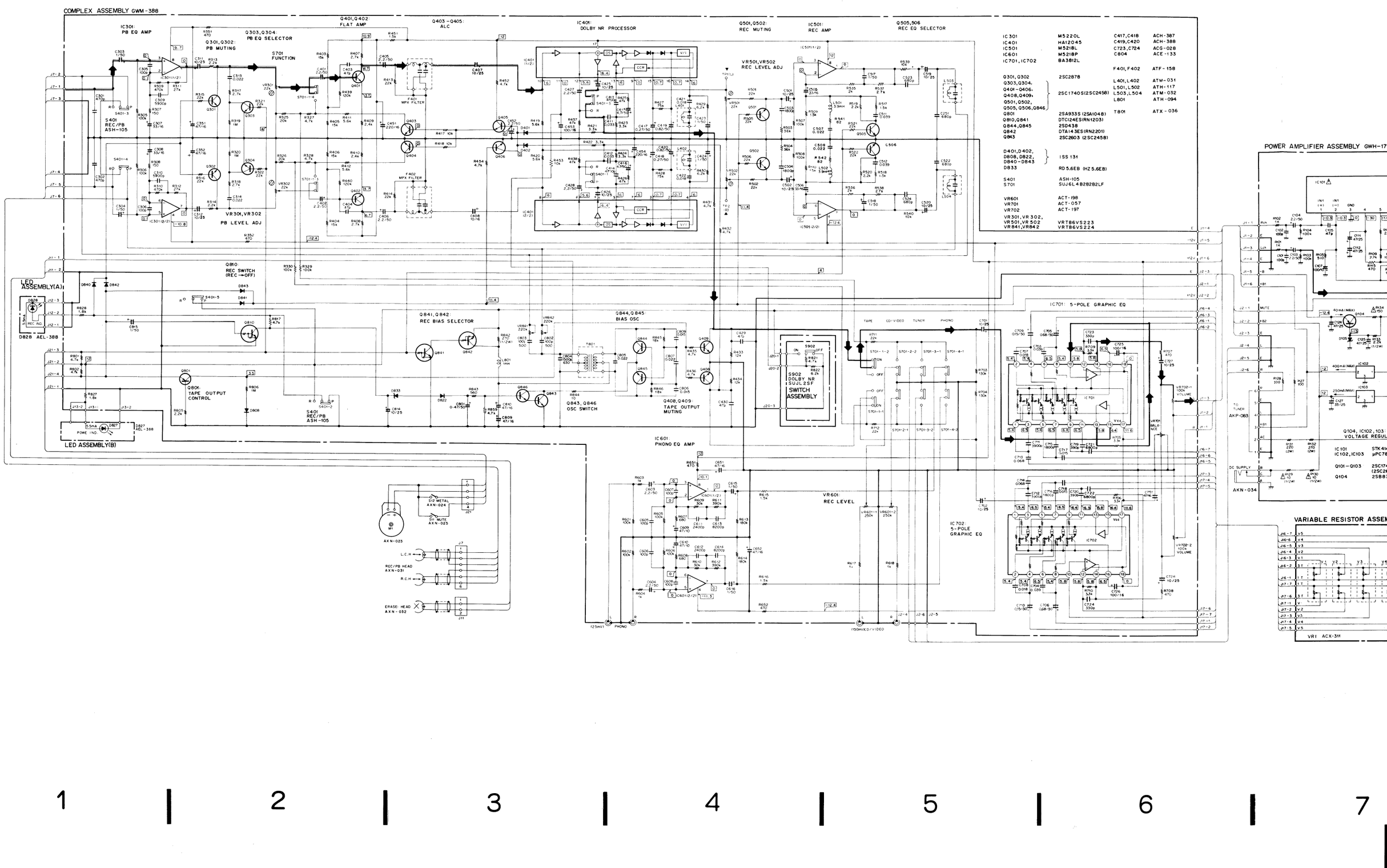
POWER AMP ASSEMBLY

IC101	STK4141-2S
IC102, IC103	μPC78M12H
Q101-Q103	2SC1740S (2SC2603)
Q104	2SB834
D101	KZL150
D102	IS2471
D103, D104, D107-D110	S5566(11E2)
D105	RD13EB(HZ13EB)
D106	3D4B41



VARIABLE RESISTOR ASSEMBLY

9. SCHEMATIC DIAGRAM



IC301	M5220L	C417,C418	ACH-387
IC401	HA12045	C419,C420	ACH-388
IC501	M5218L	C723,C724	ACG-028
IC601	M5218P	C804	ACE-133
IC701,IC702	BA3812L		
		F401,F402	ATF-158
Q301,Q302	2SC2878		
Q303,Q304, Q401-Q406, Q408,Q409, Q501,Q502, Q505,Q506,Q846	2SC1740S(2SC2458)	L401,L402 L501,L502 L503,L504 L801	ATM-031 ATH-117 ATM-032 ATH-094
Q801	2SA933S (2SA1048)	T801	ATX-036
Q810,Q841	DTC124ES(RN1203)		
Q844,Q845	2SD439		
Q842	DTA143ES(RN2201)		
Q843	2SC2603 (2SC2458)		
D401,D402, D808,D822, D840-D843	ISS 131		
D833	RD5.6EB (HZ5.6EB)		
S401	ASH-105		
S701	SUJL6L4B2B2B2LF		
VR601	ACT-198		
VR701	ACT-057		
VR702	ACT-197		
VR301,VR302, VR501,VR502 VR841,VR842	VRT6VS223 VRT6VS224		

IC101	STK4141-II
IC102,IC103	μPC78M15H
Q101-Q103	2SC1740S (2SC2603)
Q104	2SB854

ACH-387
ACH-388
ACG-028
ACE-133

ATF-158

ATM-031
ATH-117
ATM-032
ATH-094

ATX-036

1. RESISTORS:
Indicated in Ω, 1/4W and 1/8W, ±5% tolerance unless otherwise noted k; kΩ, M; MΩ, (F); ±1%, (G); ±2%, (K); ±10%, (M); ±20% tolerance
2. CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.
3. VOLTAGE, CURRENT:
(V): Signal voltage at 25W + 25W, 8Ω output (1 kHz)
: DC voltage (V) at no input signal Value in ( ) is DC voltage at rated power.
⇨ mA; DC current at no input signal
4. OTHERS:
⇨ : Signal route.
⊘ : Adjusting point.
The △ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
※ marked capacitors and resistors have parts unmbers.

HEADPHONE JACK ASSEMBLY

POWER AMPLIFIER ASSEMBLY GWH-179

IC101 2-CHANNEL POWER AMP

Q101, 102: DC VOLTAGE DETECTOR
Q103: RELAY DRIVER

Q104, IC102, 103:
VOLTAGE REGULATOR

IC101	STK4141-2S	DI01	KZL150	C131, C132	ACG-019
IC102, IC103	μPC78M12H	DI02	IS2471	C128, C129	ACH-249
		DI03, DI04, DI07-DI10		L103, L104	ATH-053
Q101-Q103	2SC1740S (2SC2603)	DI05	S5566 (11E2) RD13EB (HZ13EB)	RY101	ASR-111
Q104	2SB834	DI06	304B41	FU3	AEK-121
				FU4, FU5	AEK-123

FUSE HOLDER ASSEMBLY

FU1 AEK-122
R140 ACN-209

VARIABLE RESISTOR ASSEMBLY

VR1 ACX-311

5. SWITCHES:

OUTSIDE OF P.C.BOARDS

S1: POWER ON—OFF

TAPE TRANSPORT UNIT

S11: MUTE ON—OFF
S12: TAPE TYPE METAL ON—OFF

COMPLEX ASSEMBLY

S401: REC/PB SELECTOR REC—PLAY
S701: FUNCTION
S701-1: TAPE ON—OFF
S701-2: CD/VIDEO ON—OFF
S701-3: TUNER ON—OFF
S701-4: PHONO ON—OFF

SWITCH ASSEMBLY

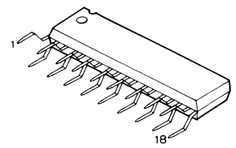
S902: DOLBY NR ON—OFF

THE UNDERLINED INDICATES THE SWITCH POSITION

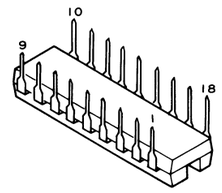
This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

External Apperance of Transistors and ICs

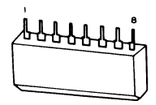
BA3812L



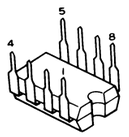
HA12045



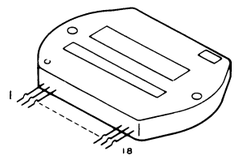
M5218L
M5220L



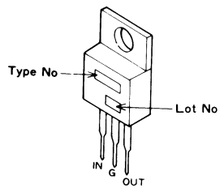
M5218P



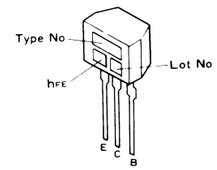
STK4141-2S



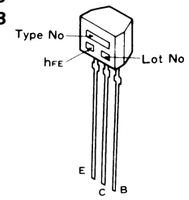
μPC78M12H



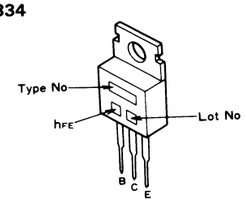
2SA933S
2SC1740S



2SA1048
2SC2458



2SB834



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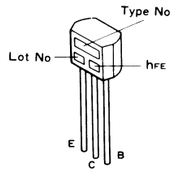

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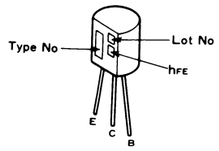
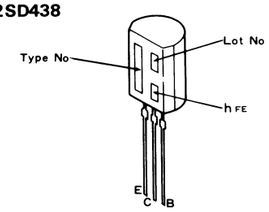
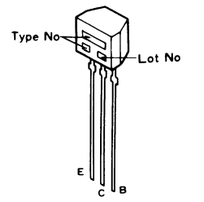


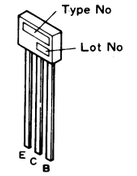
2SD438



DTA143ES
DTC124ES



RN1203
RN2201



12-2. ELECTRICAL ADJUSTMENTS

Before commencing any electrical adjustments, make sure the following checked/completed.

1. All mechanical adjustments must have been completed.
2. The heads must be clean and demagnetized.
3. 0dB=1V during level measurements.
4. Use the specified tapes for each adjustment. Although test tapes have both A and B sides, only use side A where the label is attached.
   STD-331B: Playback adjustment
   STD-608A: NORMAL blank tape
   STD-610: METAL blank tape
5. Prepare the following measuring equipment. AC millivoltmeter, audio generator, attenuator, oscilloscope.
6. Adjust both left and right channels unless otherwise specified.
7. And unless indicated otherwise, leave the DOLBY NR switch in the OFF position.
8. Let the set warm up for at least a few minutes before commencing adjustments. And before commencing the record/playback frequency response adjustment, let the set "age" for three to five minutes.
9. Always adjust the set in the given adjustments order. If the order is changed, proper adjustment will not be possible, and this may result in loss of performance.

Adjustment Procedure

1. Head azimuth adjustment
2. Playback level adjustment
3. Recording/Playback frequency response
4. Recording level adjustment

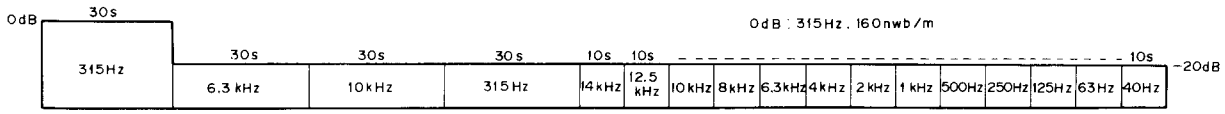


Fig. 12-4 Test tape STD-331B

• ADJUSTMENT (with auto tape selector function)

1. Head Azimuth Adjustment • Set VR301 and VR302 (playback level adjustment) to MAX positions (turn fully clockwise)

Tape selector	Mode	Input signal/test tape	Adjustment location	Measuring location	Adjustment value	Remarks
NORM	PLAY	Play 10kHz—20dB portion of STD-331B test tape.	Head azimuth adjustment screw. (Fig. 12-5)	TP1 (L) TP2 (R)	Maximum playback signal level.	Apply "screw-lock" after completing adjustment.

2. Playback Level Adjustment • Adjust precisely since this adjustment sets the playback Dolby level.

Tape selector	Mode	Input signal/test tape	Adjustment location	Measuring location	Adjustment value	Remarks
NORM	PLAY	Play the 315 Hz 0dB portion of the STD-331B test tape.	VR301 (L) VR302 (R)	TP1 (L) TP2 (R)	−7.7dBv (412mV)	

3. Recording/Playback Frequency Response Adjustment

Tape selector	Mode	Input signal/test tape		Adjustment location	Measuring location	Adjustment value	Remarks
NORM	REC	Apply a 315Hz signal to the CD/VIDEO terminals. Set the CD/VIDEO switch to ON.	1	Input signal level to be applied to the CD/VIDEO terminals.	TP1 (L) TP2 (R)	−27.7dBv (41mV)	Set the INPUT level control to the maximum position (rear panel).
NORM	REC/PLAY	Record 315Hz and 6.3kHz signals on the STD-608A test tape, and then playback signals.	2	VR841 (L) VR842 (R)	TP1 (L) TP2 (R)	Repeat the recording and palyback processes and adjust accordingly until the 6.3kHz playback level is within 0 ± 0.5dB of the 315Hz level.	

• Change the test tape and the DOLBY NR switch position and check that the frequency response zone indicated in Fig. 12-8, 9 is satisfied.

4. Recording Level Adjustment

Tape selector	Mode	Input signal/test tape		Adjustment location	Measuring location	Adjustment value	Remarks
NORM	REC	Apply a 315Hz signal to the CD/VIDEO terminals. Set the CD/VIDEO switch to ON.	1	Input signal level to be applied to the CD/VIDEO terminals.	TP1 (L) TP2 (R)	−7.7dBv (412mV)	Set the INPUT level control to the maximum position (rear panel).
NORM	REC/PLAY	Record the 315Hz signal onto the STD-608A test tape, and then paly the signal back.	2	VR501 (L) VR502 (R)	TP1 (L) TP2 (R)	Repeat the recording the playback processes, and adjust accordingly until a playback level of −7.7dBv (412mV) is obtained.	
METAL	REC/PLAY	Record the 315Hz signal onto the STD-610 test tape, and then play the signal back.	3		TP1 (L) TP2 (R)	Check that the 315Hz playback level is −7.7dBv ± 1.5dB.	

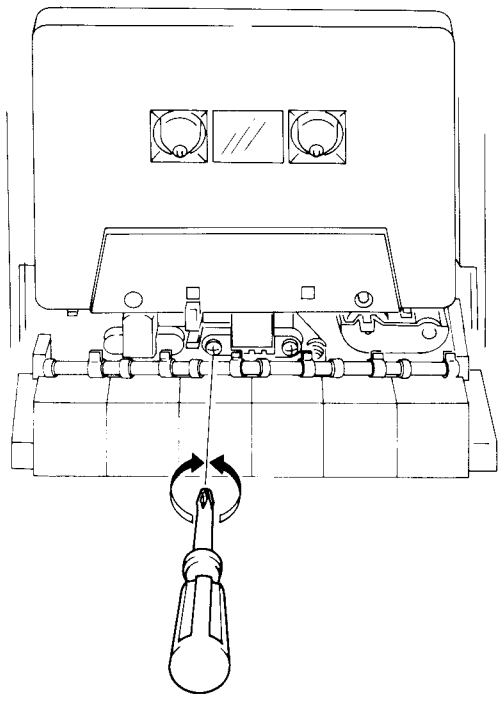


Fig. 12-5 Head azimuth adjustment

Test tape	STD-331B
DOLBY NR switch position	OFF

• The right channel is corrected by −0.5 at 125 Hz and −1 dB at 63 Hz to compensate for edge effect.

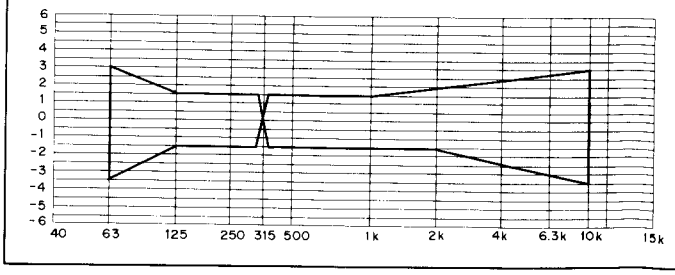


Fig. 12-6 Playback frequency response tolerance zone

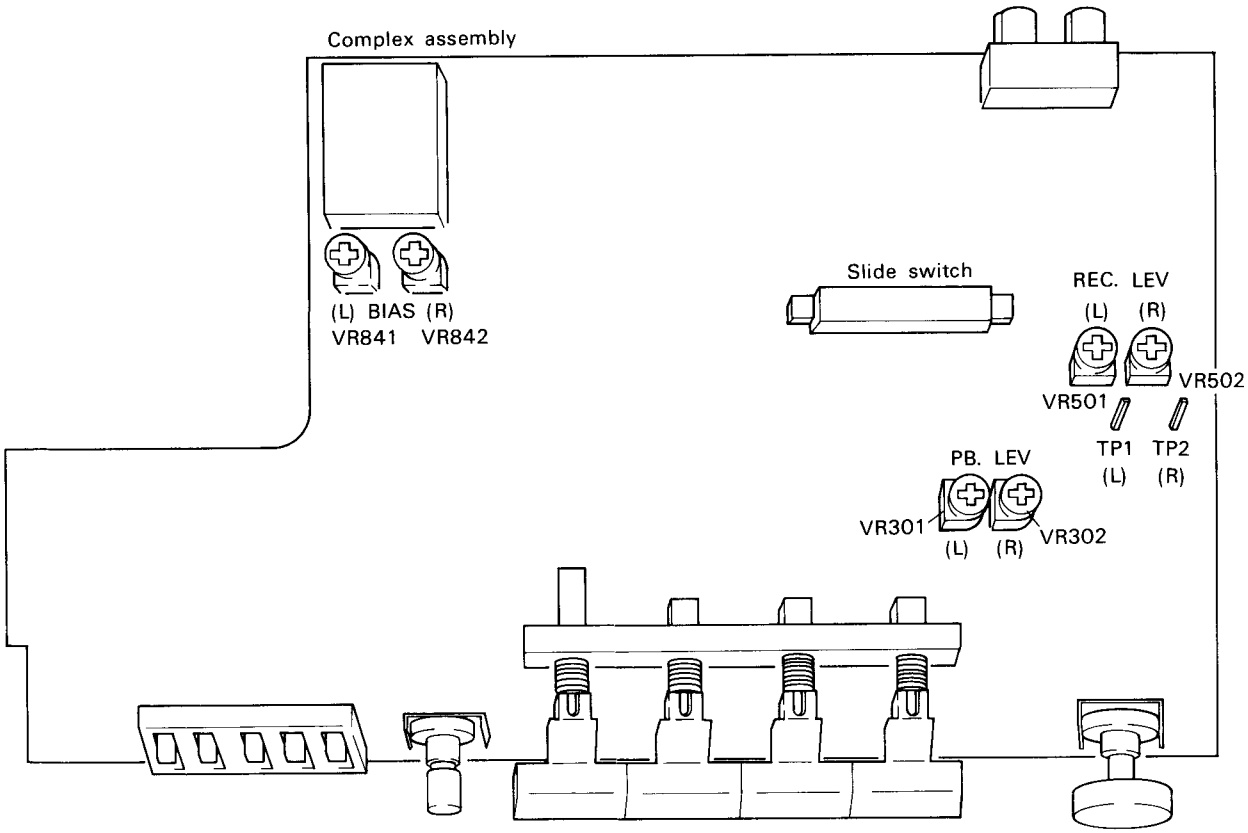


Fig. 12-7 Arrangement diagram of adjusting parts

Test tape	STD-608A	Test tape	STD-608A
DOLBY NR switch	OFF	DOLBY NR switch	ON

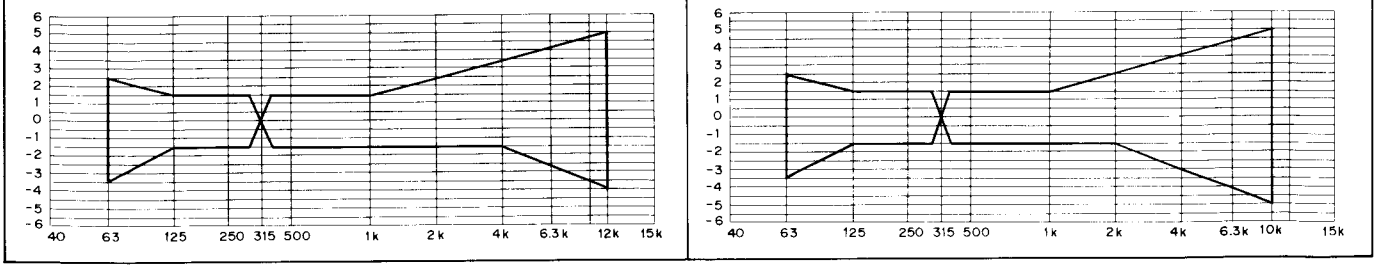


Fig. 12-8 Recording & playback frequency response tolerance zone (NORM)

Test tape	STD-610	Test tape	STD-610
DOLBY NR switch	OFF	DOLBY NR switch	ON

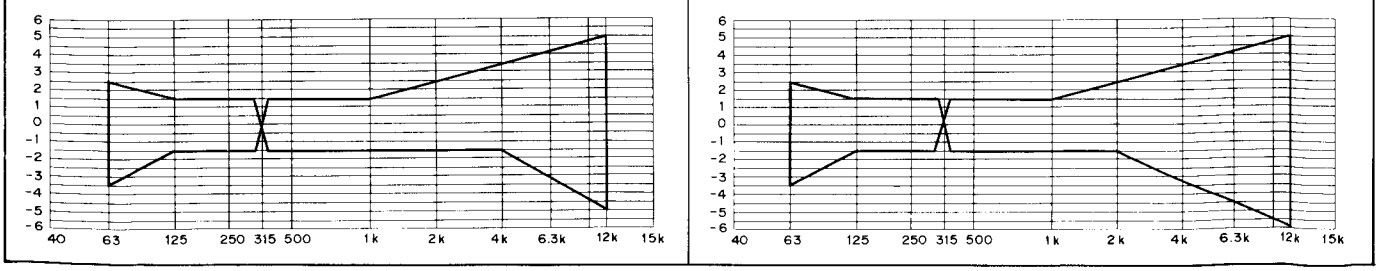


Fig. 12-9 Recording & playback frequency response tolerance zone (METAL)

12. RÉGLAGE

12-1. RÉGLAGES MECANIQUES

Avant le réglage

Nettoyer les deux embases de bobine, le cabestan et le rouleau presseur avec un tissu imbibé d'alcool.

Réglage du rouleau presseur

1. Placer la platine en mode play back (lecture).
2. Pousser doucement la jauge de tension contre le bras du rouleau presseur et séparer légèrement le rouleau presseur du cabestan.
3. Puis, replacer le rouleau presseur contre le cabestan, et lire la valeur undiqée lorsque le rouleau presseur se met à tourner. Si la lecture est dans la plage 300 — 500g, replacer le ressort du rouleau presseur.

Vérification du couple d'embase de bobine

Mesurer la couple torsiometre en modes, lecture, avance rapide (FF) et rembobinage (REW). Les valeurs mesurées devraient être comprises dans les plages indiquées dans le Tableau 1.

Si les valeurs mesurées ne sont pas comprises dans ces plages, remplacer le montage de bobine T, et/ou le montage de bobine S ou le montage de poulie intermédiaire P.

Tableau 1

	Embase de bobine T (côté droit)	Embase de bobine (côté gauche)
Mode PLAY	35g · cm—70g · cm	*1g · cm—5g · cm
Mode FF	70g · cm—140g · cm	*1g · cm—5g · cm
Mode REW	*1g · cm—5g · cm	70g · cm—140g · cm

* Couple tension arrière

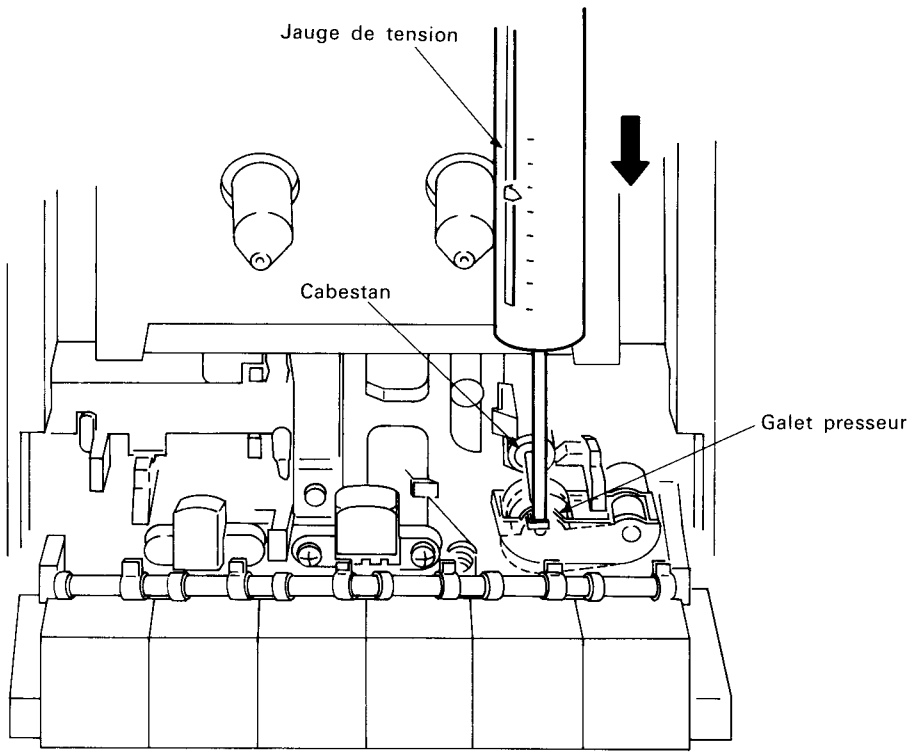


Fig. 12-1 Réglage du roulean presseur

Réglage de la vitesse de la bando

1. Connecter le fréquencemètre à la borne TP1 de l'ensemble.
2. Régler le commutateur TAPE en position ON.
3. Placer la bande-test STD-301 sur la platine.
4. Vérifier si la fréquence de lecture de la platine est de 3010 Hz±5 Hz.
5. Si la fréquence lue est en dehors de cette marge, régler la résistance semi-fixe par l'orifice de réglage situé à l'arrière du moteur pour obtenir 3010 Hz±10Hz.

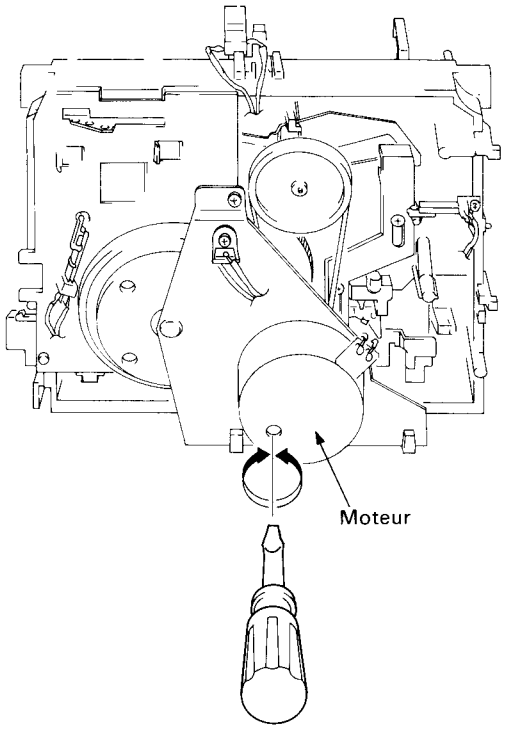


Fig. 12-2 Shéma de localisation des pièces de réglage

Platine combinée REC

1. Vérifer que le commutateur coulissant est correctement en contact lorsque l'unité de transport de bande est en mode enregistrement.
2. Déplacer la position de prise du mécanisme combiné REC si le commutateur coulissant n'est pas correctement en contact.

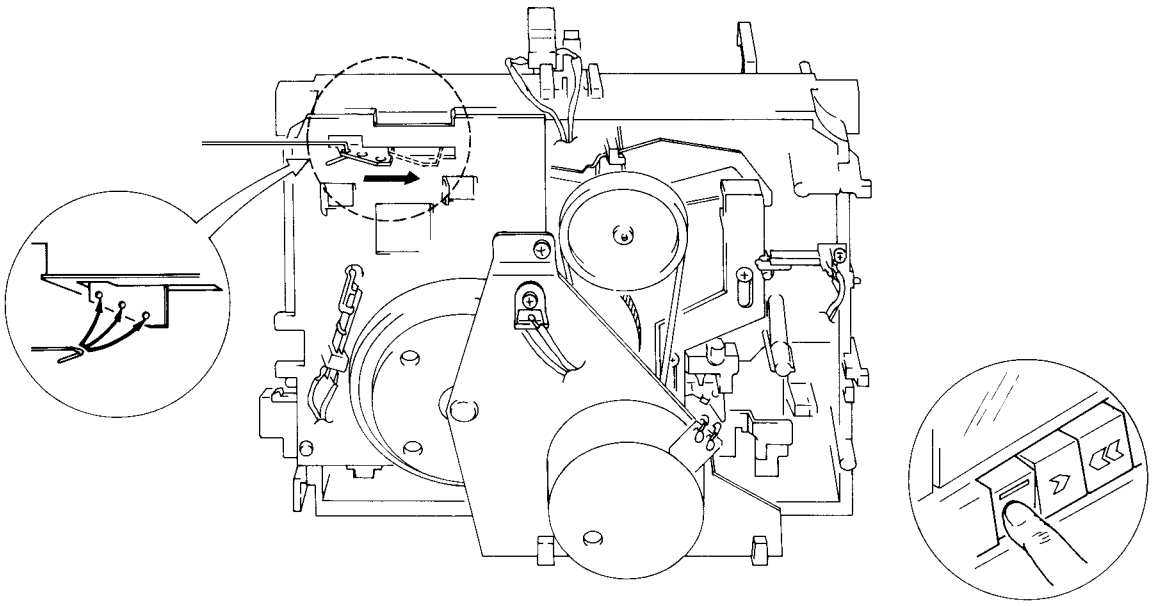


Fig. 12-3 Réglage mixte dénregistrement

12-2. RÉGLAGES ÉLECTRIQUES

■ Avant de commencer à procéder aux réglages électriques, bien effectuer les vérifications suivantes.

1. Tous les réglages mécaniques ont été effectués.
2. Les têtes doivent être propres et démagnétisées.
3. 0 dB=1V pendant les mesures de niveau.
4. Utiliser les bandes spécifiées pour chaque réglage. Bien que les bandes d'essai aient à la fois une face A et une face B, n'utiliser que la face A sur laquelle est attachée l'étiquette.
   STD-331B: Réglage de la reproduction.
   STD-608A: Bande vierge ordinaire. (NORMAL)
   STD-610: Bande vierge au métal (METAL)
5. Préparer les équipements e mesure ci-après: millivoltmètre CA, générateur audio, atténuateur, oscilloscope.
6. Régler à la fois le canal gauche et le canal droit, sauf spécification contraire.
7. Sauf spécification contraire, laisser le commutateur de réduction de bruit DOLBY en position arrêt (OFF).
8. Laisser l'appareil chauffer pendant au moins quelques minutes avant de commencer les réglages. Avant de commencer le réglage de la réponse en fréquences enregistrement/reproduction, laisser l'appareil fonctionner de trois à cinq minutes.
9. Toujours procéder aux réglages dans l'ordre indiqué. Si cet ordre est modifié, il ne sera plus possible d'effectuer des réglages correctement, et cela pourait entraîner une dégradation des performances.

Procédure de réglage

1. Réglage de l'azimutage de la tête.
2. Réglage du niveau de reproduction.
3. Réponse en fréquences enregistrement/reproduction.
4. Réglage du niveau d'enregistrement.

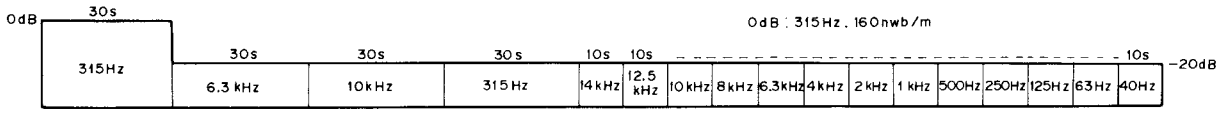


Fig. 12-4 Band d'essai STD-331B

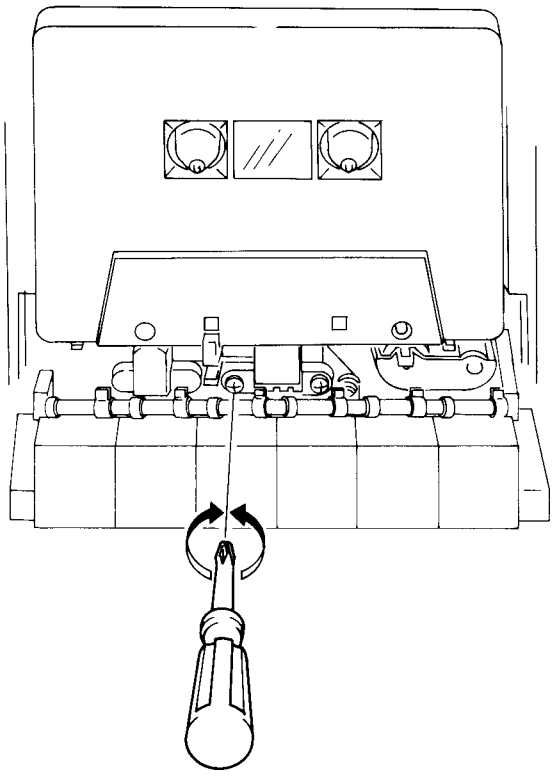


Fig. 12-5 Réglage d'azimuth de la tête

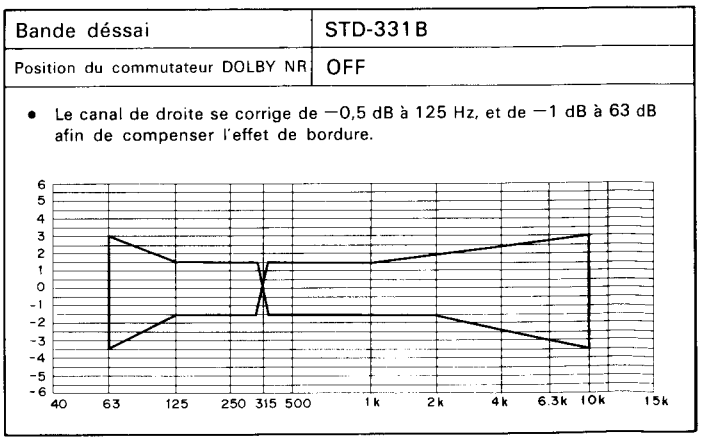


Fig. 12-6 Zone de tolérance de la réponse de fréquence de lecture

• RÉGLAGE (Avec sélecteur automatique de bande)

1. Réglage de l'azimutage de la tête

• Placer le VR301 et le VR302 (Réglage de niveau de reproduction) sur la position maximale (tourner complètement dans le sens des aiguilles d'une montre).

Sélecteur de bande	Mode	Signal d'entrée/bande d'essai	Emplacement du réglage	Emplacement de mesure	Valeur de réglage	Remarques
Normal (NORM)	Reproduction (PLAY)	Reproduire la portion 10kHz −20dB de la bande d'essai STD-331B.	Vis de réglage de l'azimutage de la tête. (Fig. 12-5)	TP1 (L) TP2 (R)	Niveau de signal de reproduction maximal.	Mettre en place "l'arrêt de vis" après avoir effectué ce réglage.

2. Réglage du niveau de reproduction

• Procéder à ce réglage avec précision car celui-ci détermine le niveau de reproduction du DOLBY.

Sélecteur de bande	Mode	Signal d'entrée/bande d'essai	Emplacement du réglage	Emplacement de mesure	Valeur de réglage	Remarques
Normal (NORM)	Reproduction (PLAY)	Reproduire la portion 315Hz 0dB de la bande d'essai STD-331B.	VR301 gauche (L) VR302 droit (R)	TP1 (L) TP2 (R)	−7,7dBv (412mV)	

3. Réglage de la réponse en fréquences d'enregistrement et de reproduction

Sélecteur de bande	Mode	Signal d'entrée/bande d'essai		Emplacement du réglage	Emplacement de mesure	Valeur de réglage	Remarques
Normal (NORM)	Enregistrement (REC)	Appliquer un signal 315Hz aux bornes CD/VIDEO. Mettez le commutateur CD/VIDEO sur ON.	1	Entrer le signal de niveau à appliquer aux bornes de CD/VIDEO.	TP1 (L) TP1 (R)	−27,7dBv (41mV)	Amener la commande de niveau INPUT sur la position maximale (panneau arrière).
Normal (NORM)	Enregistrement/reproduction (REC/PLAY)	Enregistrer des signaux de 315Hz et 6,3kHz sur la bande d'essai STD-608A, et reproduire ensuite les signaux.	2	VR841 gauche (L) VR842 droit (R)	TP1 (L) TP2 (R)	Recommencer les procédures d'enregistrement et de reproduction, et procéder au réglage en conséquence jusqu' à ce que le niveau de reproduction du 6,3kHz soit compris entre 0 ±0,5dB du niveau du 315Hz.	

• Changer la bande d'essai et la position du commutateur de réducteur de bruit DOLBY, et vérifier que la courbe de réponse en fréquences indiquée sur la Fig. 12-8, 9 est respectée.

4. Réglage du niveau d'enregistrement

Sélecteur de bande	Mode	Signal d'entrée/bande d'essai		Emplacement du réglage	Emplacement de mesure	Valeur de réglage	Remarques
Normal (NORM)	Enregistrement (REC)	Appliquer un signal 315Hz aux bornes CD/VIDEO. Mettez le commutateur CD/VIDEO sur ON.	1	Entrer le signal de niveau à appliquer aux bornes de CD/VIDEO.	TP1 (L) TP2 (R)	−7,7dBv (412mV)	Amener la commande de niveau INPUT sur la position maximale (panneau arrière).
Normal (NORM)	Enregistrement/reproduction (REC/PLAY)	Enregistrer le signal de 315Hz sur la bande d'essai STD-608A, puis reproduire le signal.	2	VR501 gauche (L) VR502 droit (R)	TP1 (L) TP2 (R)	Recommencer les procédures d'enregistrement et de reproduction, et procéder au réglage jusqu'à ce que un niveau de reproduction de −7,7dBv (412mV) soit obtenu.	
Métal (METAL)	Enregistrrement/reproduction (REC/PLAY)	Enregistrer le signal de 315Hz sur la bande d'essai STD-610, puis reproduire le signal.	3		TP1 (L) TP2 (R)	Vérifier que le niveau de reproduction du 315Hz est à −7,7dBv ± 1,5dB.	

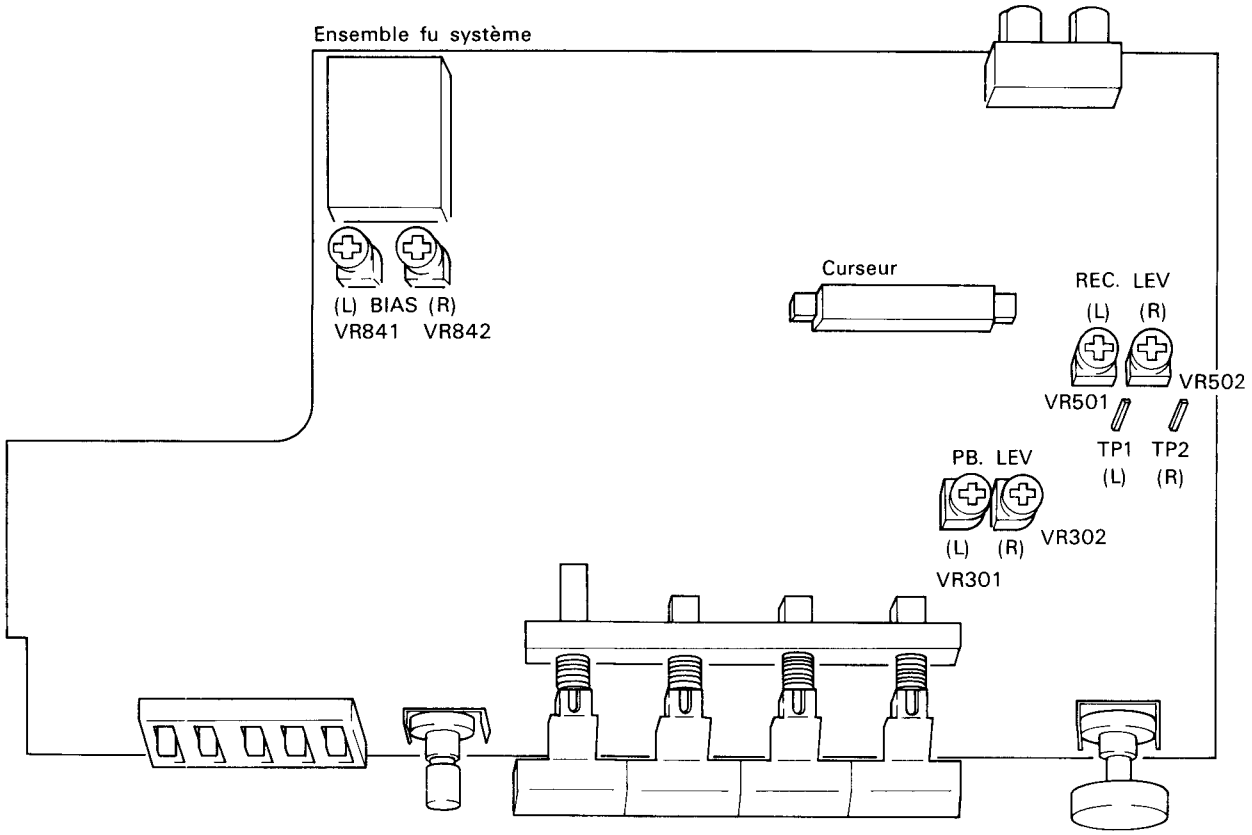


Fig. 12-7 Shéme de localisation des pièces de réglage

Bande déssai	STD-608A	Bande déssai	STD-608A
Commutateur DOLBY NR	OFF	Commutateur DOLBY NR	ON

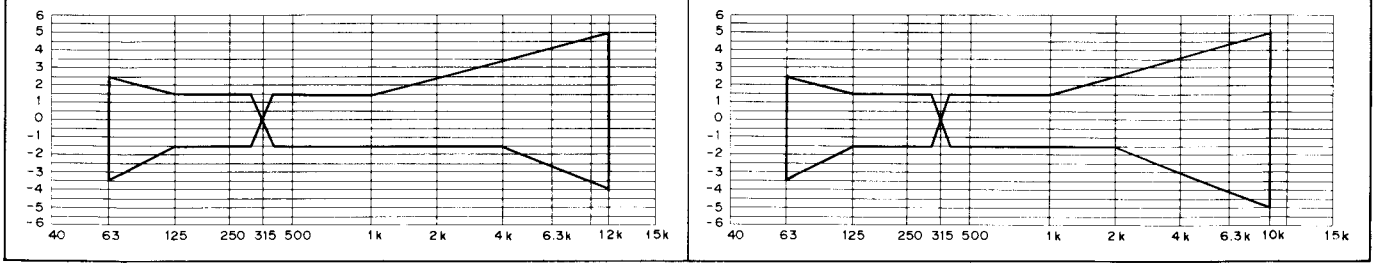


Fig. 12-8 Zone de tolérance de la réponse de fréquence d'enregistrement et de lecture (NORM)

Bande déssai	STD-610	Bande déssai	STD-610
Commutateur DOLBY NR	OFF	Commutateur DOLBY NR	ON

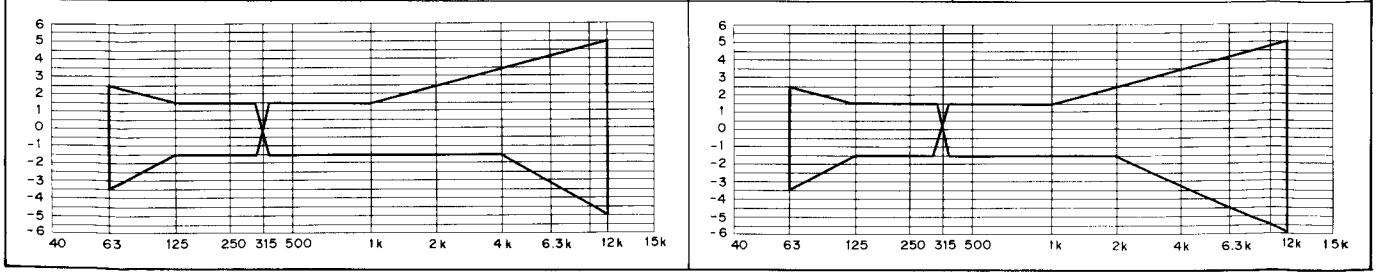


Fig. 12-9 Zone de tolérance de la réponse de fréquence d'enregistrement et de lecture (METAL)

12. AJUSTE

12-1. AJUSTES MECANICOS

Antes del ajuste

Limpie ambas bases del carrete, el cabrestante y el rodillo de prensado con una escobillón humedecido en alcohol.

Ajuste de la presión del rodillo de prensado

1. Ponga el magnetofóno en el modo de reproducción.
2. Suavemente empuje en contra del brazo del rodillo de prensado con el indicador de tensión y separe el rodillo de prensado ligeramente del cabrestante.
3. Luego ponga de nuevo el rodillo de prensado en el cabrestante, y lea la lectura cuando el rodillo de prensado empieze a girar.
   Si la lectura no está dentro de 300 a 500g, cambie el resorte de presión del rodillo de prensado.

Inspección del par de torsión de la base de carrete

Mida el par de torsión con un medidor de par de torsión durante la reproducción, en los modos de avance rápido (FF) y rebobinado (REW). Los valores medidos deberan normalmente estar dentro de los rangos permisibles enlistados en la table 1.
Si los valores medidos están fuera de los rangos pertinentes, cambie el conjunto del carrete T, y/o el conjunto del carrete S o el conjunto de la rueda loca P.

Tabla 1

	Base del carrete T (lado R)	Base del carrete S (lado L)
Mode PLAY	35g · cm—70g · cm	*1g · cm—5g · cm
Mode FF	70g · cm—140g · cm	*1g · cm—5g · cm
Mode REW	*1g · cm—5g · cm	70g · cm—140g · cm

* Par de contra tensión

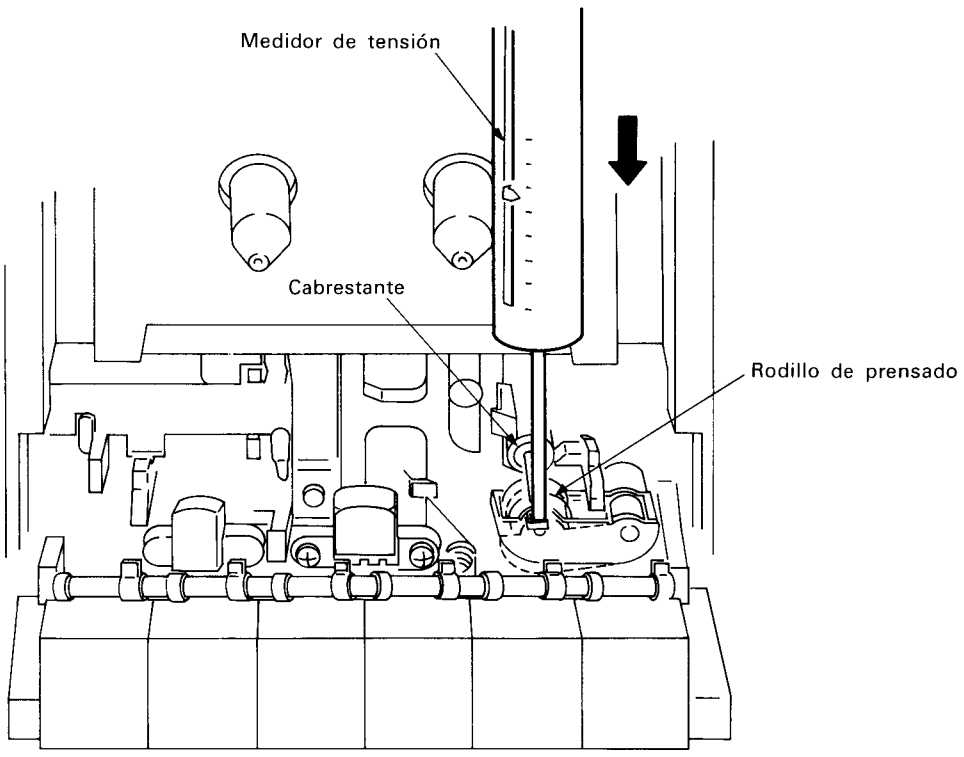


Fig. 12-1 Ajuste de la presión del rodillo de prensado

Ajuste de la velocidad de cinta

1. Conecte el frecuencimetro a la terminal TP1 en el conjunto compuesto.
2. Fije el interruptor de TAPE a la posición ON.
3. Introduzca la cinta de prueba STD-301 en el magnetofóno.
4. Inspeccione que la frecuencia de reproducción sea 3010 Hz±5 Hz.
5. Si la lectura de la frecuencia está fuera de este rango, ajuste el resistro semifijado a través del orificio de ajuste localizado detras del motor para obtener 3010 Hz±10Hz.

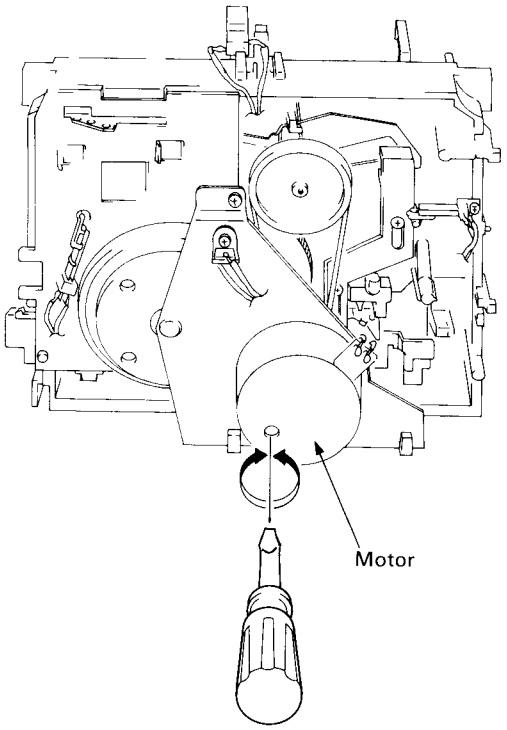


Fig. 12-2 Diagrama de disposición de las partes de ajuste

Inspección de la unión REC

1. Inspeccione que el interruptor deslizable este cambiado completamente cuando la unidad de transporte de la cinta está en el modo de grabación.
2. Mueva la posición de trabado del mecanismo de unión REC si el interruptor deslizable no esta completamente cambiado.

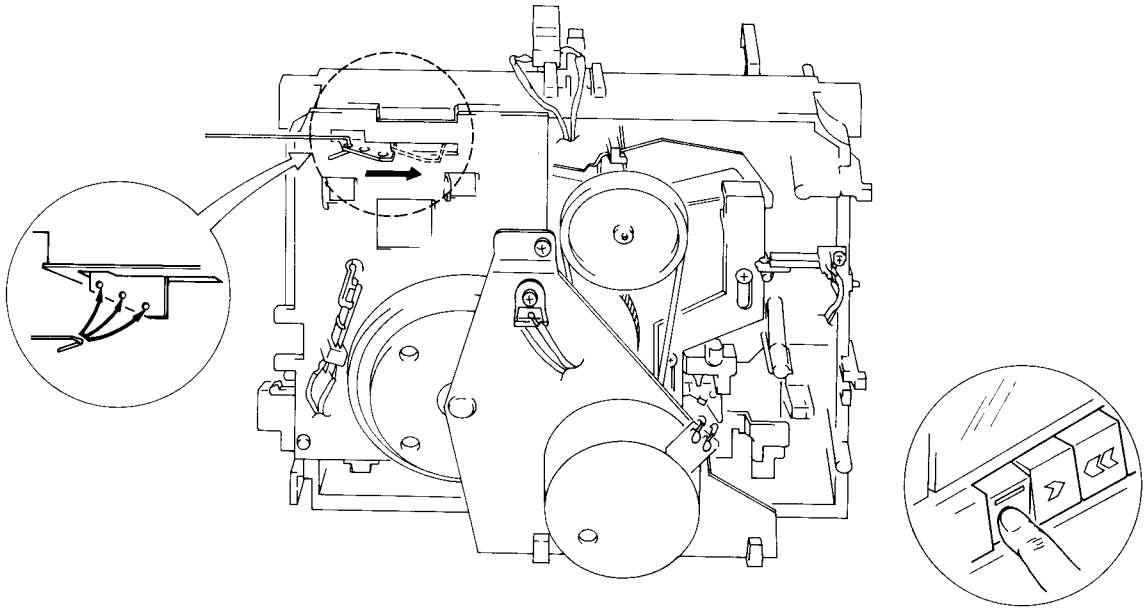


Fig. 12-3. Ajuste de la unión de REC

12-2. ADJUSTES ELECTRICOS

■ Antes de iniciar cualquier ajuste, cerciorarse de haber completado y comprobado lo siguiente.

1. Deben haberse completo todos los ajustes mecánicos.
2. Las cabezas deben ester limpias y desmagnetizadas.
3. 0 dB=1V durante las mediciones del nivel.
4. Emplear las cintas especificadas para cada ajuste. Aunque estas cintas están provistas de ambos lados, A y B, emplear sólo el lado A, donde está la etiqueta.
   STD-331B: Adjuste de reproducción.
   STD-608A: Cinta en blanco NORMAL.
   STD-610: Cinta en blanco de METAL.
5. Preparar el siguiente equipo de medición: Un voltimetro de CA, un generador de sonido, un atenuador y un osciloscopio.
6. Ajustar los canales izquierdo y derecho a menos que se especifique lo contrario.
7. Y a menos que se diga lo contrario, dejar el interruptor DOLBY NR en la posición OFF.
8. Dejar que se precaliente el aparato durante algunos minutos antes de iniciar los ajustes.
   Y antes de empezar el ajuste de la respuesta en frecuencia para reproducción y grabación, dejar que se precaliente de tres a cinco minutors.
9. Ajustar siempre el aparato en el orden de ajuste dado. Si se cambia el orden, no son posibles los ajustes adecuados, lo cual puede ocasionar pérdida del rendimiento.

Procedimientos de ajuste

1. Ajuste del acimut de la cabeza.
2. Ajuste del nivel de repoducción.
3. Respuesta en frecuencia de grabación/reproducción.
4. Ajuste del nivel de grabación.

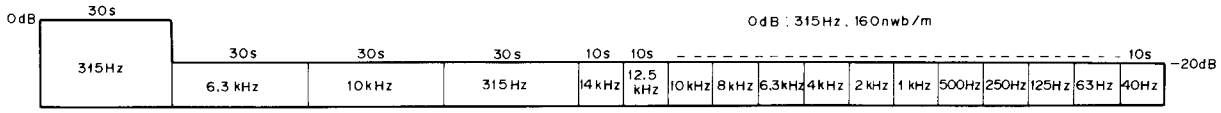


Fig. 12-4 Cinta de prueba STD-331B

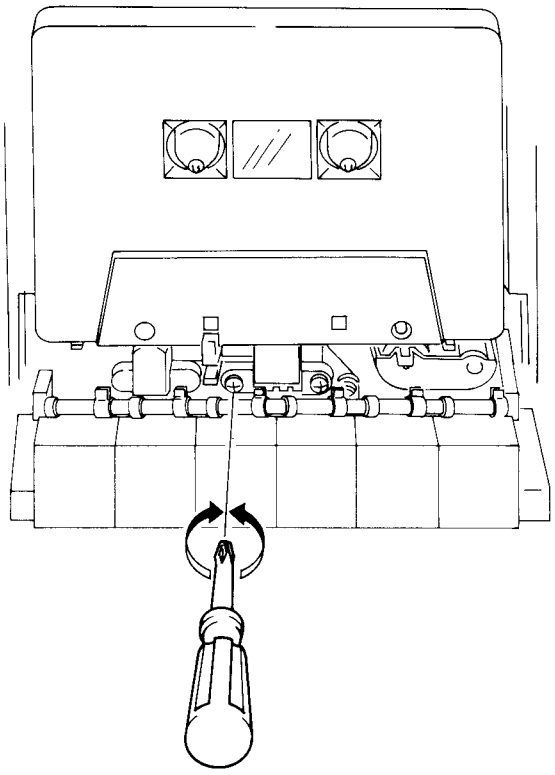


Fig. 12-5 Ajuste del acimut de la cabeza

• AJUSTE (Con la función del selector automático de cintas)

1. Ajuste del acimut de la cabeza

• Ajustar VR301 y VR302 (Ajuste del nivel de reproducción) a las posiciones MAX (Girados completamente a la derecha)

Selector de cintas	Modo	Señal de entrada/cinta de prueba	Lugar de ajuste	Lugar de medición	Valor de ajuste	Observaciones
NORM	PLAY	Reproducir la parte de 10kHz −20dB de la cinta de prueba STD-331B.	Tornillo de ajuste del acimut de la cabeza. (Fig. 12-5)	TP1 (L) TP2 (R)	Nivel máximo de la señal de reproducción.	Aplicar el "enclavamiento del tornillo "después de terminar el ajuste.

2. Ajuste del nivel de reproducción

• Ajustar con precisión porque este aduste establece el nivel del sistema Dolby de reproducción.

Selector de cintas	Modo	Señal de entrada/cinta de prueba	Lugar de ajuste	Lugar de medición	Valor de ajuste	Observaciones
NORM	PLAY	Reproducir la parte de 315Hz 0dBv de la cinta de prueba STD-331B.	VR301 (L) VR302 (R)	TP1 (L) TP2 (R)	−7,7dBv (412mV)	

3. Ajuste de la respuesta en frecuencia para grabación/reproducción

Selector de cintas	Modo	Señal de entrada/cinta de prueba		Lugar de ajuste	Lugar de medición	Valor de ajuste	Observaciones
NORM	REC	Aplique una señal de 315Hz a las terminales CD/VIDEO. Fije el interruptor de CD/VIDEO a ON.	1	Nivel de señal de entrada a ser aplicada a las terminales CD/VIDEO.	TP1 (L) TP2 (R)	−27,7dBv (41mV)	Fije el control de nivel de INPUT (entrada) a la posición máxima (panel trasero).
NORM	REC/PLAY	Grabar las señales de 315Hz y de 6,3kHz en la cinta de prueba STD-608A, y luego reproducirlas.	2	VR841 (L) VR842 (R)	TP1 (L) TP2 (R)	Repetir los procesos de grabación y reproducción y ajustar consecuentemente hasta que el nivel de reproducción de 6,3kHz esté dentro de 0 ± 0,5dB del nivel de 315Hz.	

• Cambiar la cinta de prueba y la posición del interruptor DOLBY NR y comprobar que la zona de respuesta en frecuencia indicada en la Fig.12-8, 9 se satisfaga.

4. Ajuste del nivel de grabación

Selector de cintas	Modo	Señal de entrada/cinta de prueba		Lugar de ajuste	Lugar de medición	Valor de ajuste	Observaciones
NORM	REC	Aplique una señal de 315Hz a las terminales CD/VIDEO. Fije el interruptor de CD/VIDEO a ON.	1	Nivel de señal de entrada a ser aplicada a las trminales CD/VIDEO.	TP1 (L) TP2 (R)	−7,7dBv (412mV)	Fije el control de nivel de INPUT (entrada) a la posición máxima (panel trasero).
NORM	REC/PLAY	Grabar la señal de 315Hz en la cinta de prueba STD-608A y reproducirlas.	2	VR501 (L) VR502 (R)	TP1 (L) TP2 (R)	Repetir los procesos de grabaación y ajustar coinsecuentemente hasta que se obtenga un nevel de reproducción de −7,7dBV (412mV).	
METAL	REC/PLAY	Grabar la señal de 315Hz en la cinta de prueba STD-610 y reproducirla.	3		TP1 (L) TP2 (R)	Comprobar que el nivel de reproducción de 315Hz sea de −7,7dBv ± 1,5dB.	

Cinta de prueba	STD-331B
Posición del interruptor DOLBY NR	OFF

• El canal derecho se corrige en −0,5 dB a 125 Hz y −1 dB a 63 Hz para compensar el efecto de los bordes.

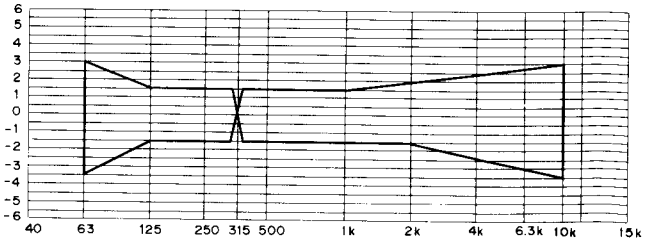


Fig. 12-6 Zona de tolerancia de respuesta de frecuencia de reproducción

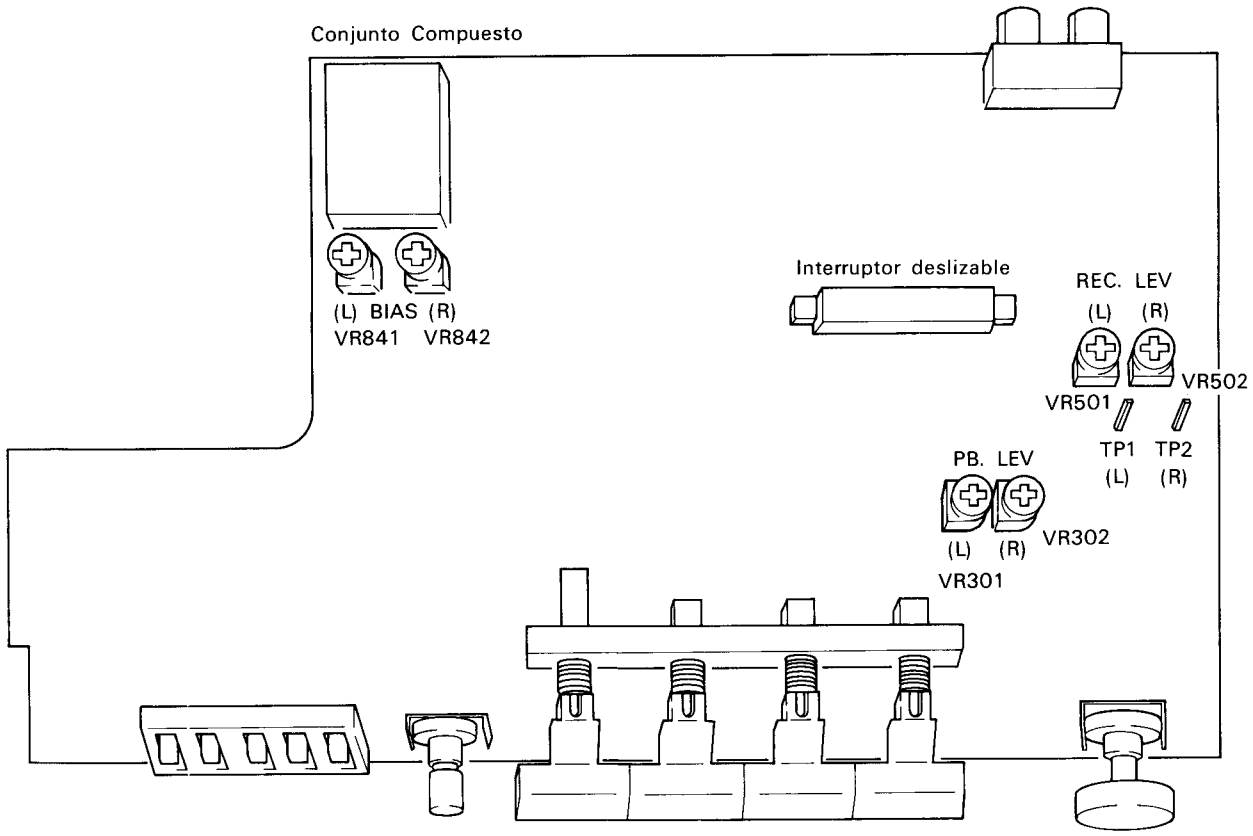


Fig. 12-7 Diagrama de disposición de las partes de ajuste

Cinta de prueba	STD-608A	Cinta de prueba	STD-608A
Interruptor DOLBY NR	OFF	Interruptor DOLBY NR	ON

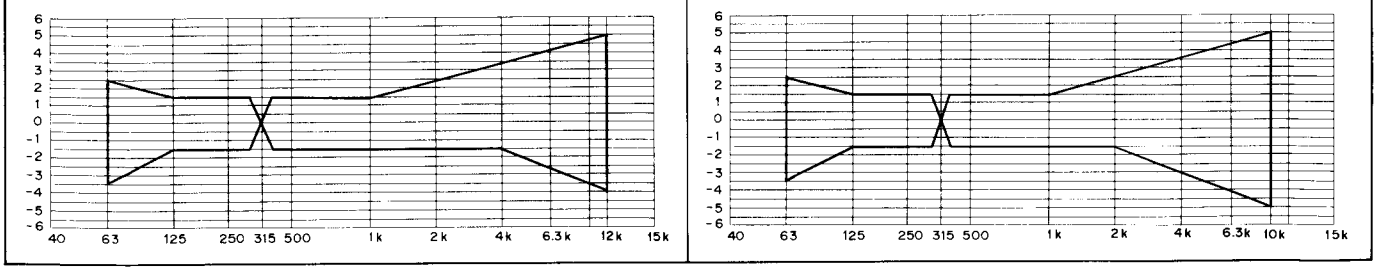


Fig. 12-8 Zona de tolerancia de copia y respuesta de frecuencia de reproducción (NORM)

Cinta de prueba	STD-610	Cinta de prueba	STD-610
Interruptor DOLBY NR	OFF	Interruptor DOLBY NR	ON

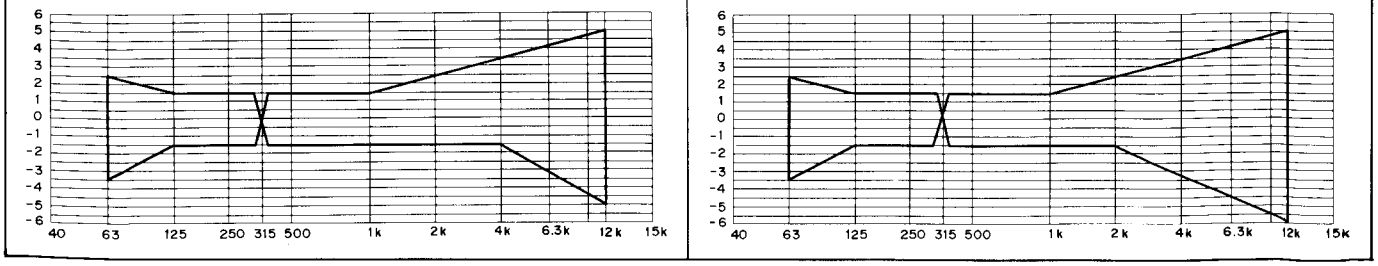


Fig. 12-9 Zona de tolerancia de copia y respuesta de frecuencia de reproducción (METAL)

13. FOR HE, HB, S AND YP TYPES

The (DC-111Z and DC-110Z), HB, S, and YP types are the same as the KU type with the exception of the folloing sections.

Contrast of Miscellaneous parts.

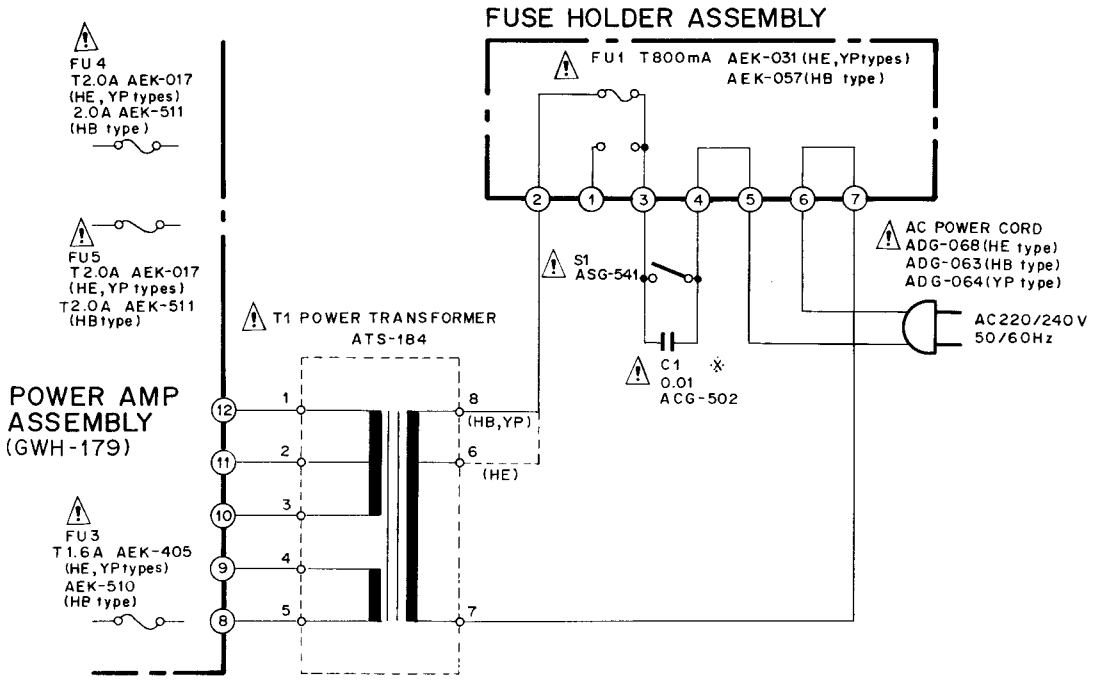
Mark	Symbol & Description	Part No.				
		DC-111Z KU type	DC-111Z and DC-110Z HE type	DC-111Z HB type	DC-111Z and DC-110Z S type	DC-111Z YP type
⚠ ★	T1 Power transformer					
	(AC 120V)	ATS-196	....	....	....	....
	(AC220V/240V)	....	ATS-184	ATS-184		ATS-184
	(AC110V/120V/220V/240V)	....	....	....	ATS-198	....
⚠ ★★	Line voltage selecter	....	....	....	AKX-506	....
⚠ ★★	FU1 Fuse (2A)	AEK-122	....	....	....	....
	FU1 Fuse (T800mA)	....	AEK-031	....	....	AEK-031
	FU1 Fuse (T800mA)	....	....	AEK-507	....	....
	FU1 Fuse (1A)	....	....	....	AEK-119	....
⚠ ★★	FU2 Fuse (1A)	....	....	....	AEK-119	....
⚠ ★★	FU3 Fuse (1.6A)	AEK-121	....	....	AEK-121	....
	FU3 Fuse (T1.6A)	....	AEK-405	....	....	AEK-405
	FU3 Fuse (T1.6A)	....	....	AEK-510	....	....
⚠ ★★	FU4 Fuse (2.5A)	AEK-123	....	....	AEK-123	....
	FU4 Fuse (T2.0A)	....	AEK-017	....	....	AEK-017
	FU4 Fuse (T2.0A)	....	....	AEK-511	....	....
⚠ ★★	FU5 Fuse (2.5A)	AEK-123	....	....	AEK-123	....
	FU5 Fuse (T2A)	....	AEK-017	....	....	AEK-017
	FU5 Fuse (T2A)	....	....	AEK-511	....	....
⚠	AC Power cord	ADG-073	ADG-068	ADG-063	ADG-073	ADG-064
	Operating instruction (Engligh)	ARB-679	....	ARB-679	ARB-679	ARB-679
	(English/French/German/Italian)	....	ARE-130	....	....	....
	(Spanish)	....	....	....	ARC-087	....
	Packing case (DC-111Z)	AHE-527	AHE-527	AHE-527	AHE-527	AHE-527
	(DC-110Z)	....	AHE-528	....	AHE-528	....

Line voltage selection for HE, HB types.

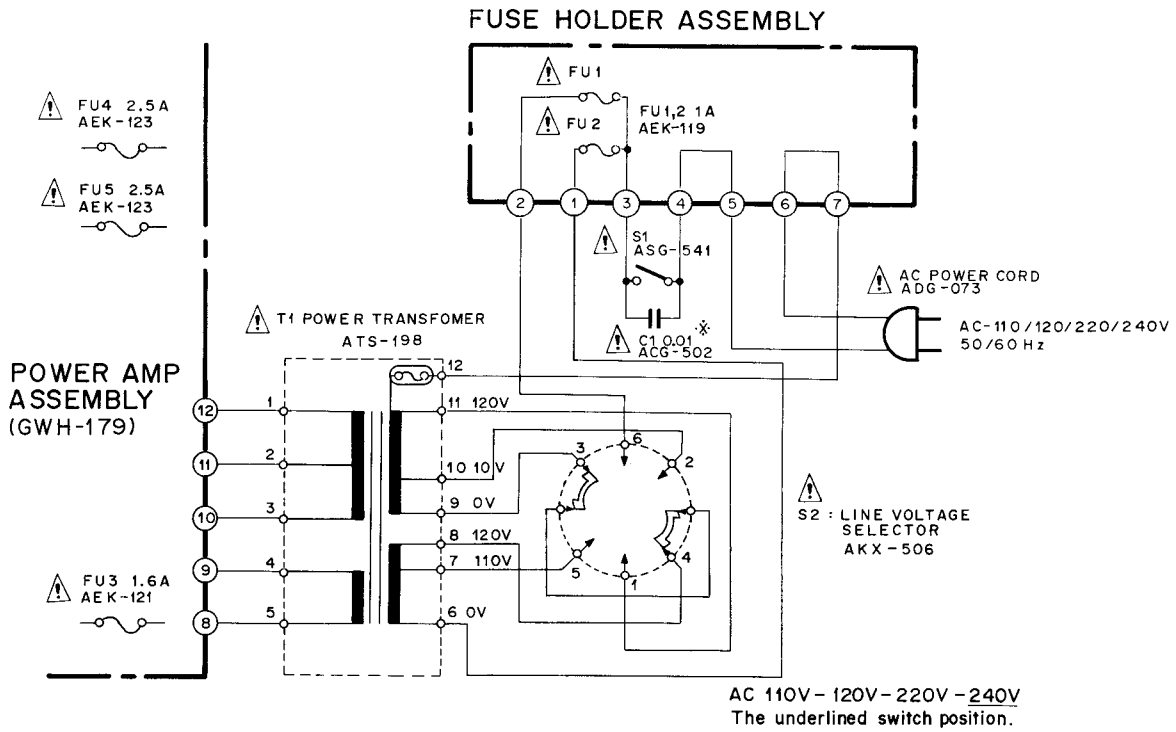
1. Disconnect the AC power cord.
2. Remove the bonnet case.
3. Change the connection of the power transformer primary lead wire as follows:
   - 220V: Disconnect the terminal no.2 on the fuse holder assembly to the terminal no.8 of the power transformer, and connect the terminal no.2 on the fuse holder assembly to the terminal no.6 of the power transformer.
   - 240V: Disconnect the terminal no.2 on the fuse holder assembly to the terminal no.6 of the power transformer, and connect the terminal no.2 on the fuse holder assembly to the terminal no.8 of the power transformer.
4. Stick the line voltage label on the rear panel.

Description	Part No.
220V label	AAX-193
240V label	AAX-192

Shcematic diagram for HE, HB, and YP types.



Schematic diagram for S type.



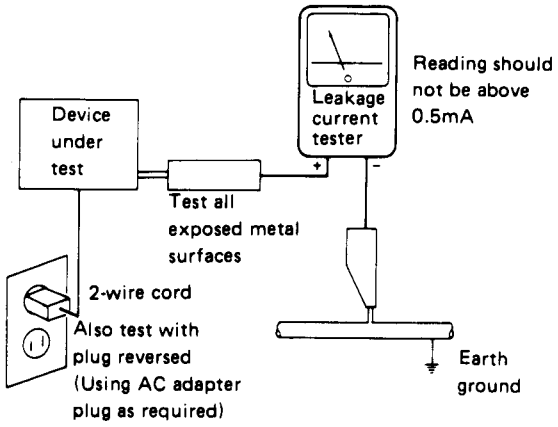
14. SAFETY INFORMATION

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.


Reading should not be above 0.5mA
Leakage current tester
Device under test
Test all exposed metal surfaces
2-wire cord
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.